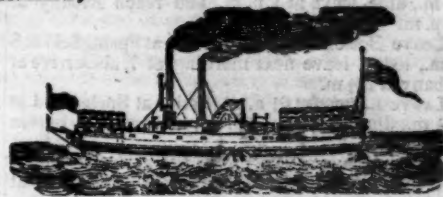
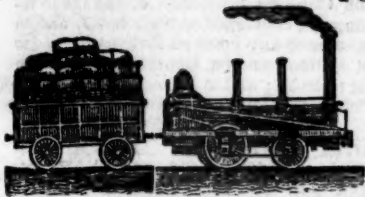


# AMERICAN RAILROAD JOURNAL, AND GENERAL ADVERTISER

FOR RAILROADS, CANALS, STEAMBOATS, MACHINERY,

AND MINES.

ESTABLISHED 1831.



PUBLISHED WEEKLY, AT No. 23 CHAMBERS STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM.

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SATURDAY, JULY 18, 1846.

[WHOLE No. 526, VOL. XIX.

**BOSTON AND PROVIDENCE RAILROAD.** Passenger Notice. Summer Arrangement. On and after Monday, April 6, 1846, the Passenger Trains will run as follows:

For New York—Night Line, via Stonington. Leaves Boston every day, but Sunday, at 5 p.m.  
Accommodation Trains, leave Boston at 7½ a.m. and 4 p.m., and Providence at 8 a.m. and 4½ p.m.  
Dedham trains, leave Boston at 8 a.m. 12½ m., 3½ p.m., and 6½ p.m. Leave Dedham at 7 a.m. and 9½ a.m. and 2½ and 5½ p.m.  
Stoughton trains, leave Boston at 11½ a.m. and 5½ p.m. Leave Stoughton at 7-20 a.m. and 3½ p.m.  
All baggage at the risk of the owners thereof.  
31 ly W. RAYMOND LEE, Sup't.

**BRANCH RAILROAD and STAGES CONNECTING with the Boston and Providence Railroad.**  
Stages connect with the Accommodation trains at the Foxboro' Station, to and from Woonsocket. At the Seekonk Station, to and from Lonsdale, R. I. via Pawtucket. At the Sharon Station, to and from Walpole, Mass. And at Dedham Village Station, to and from Medford, via Medway, Mass. At Providence, to and from Bristol, via Warren, R. I.—Taunton, New Bedford and Fall River cars run in connect-on with the accommodation trains.

**NORWICH AND WORCESTER RAILROAD.** Summer Arrangement, commencing Monday, April 6, 1846.

Accommodation Trains, daily, except Sunday. Leave Norwich, at 6 a.m., and 4½ p.m. Leave Worcester, at 10 a.m., and 4½ p.m.

The morning Accommodation Trains from Norwich, and from Worcester, connect with the trains of the Boston, and Worcester and Western railroads each way.

The Evening Accommodation Train from Worcester connects with the 1½ p.m. train from Boston.

New York Train via Long Island Railroad: Leave Allyn's Point for Boston, about 1 p.m., daily, except Sunday.

Leave Worcester for New York, about 10 a.m., stopping at Webster, Danielsonville, and Norwich.

New York Train via Steamboat—Leave Norwich for Boston, every morning, except Monday, on the arrival of the steamboat from New York, stopping at Norwich and Danielsonville.

Leave Worcester for New York, upon the arrival of the train from Boston, at about 4½ p.m., daily, except Sunday, stopping at Webster, Danielsonville and Norwich.

Freight Trains daily each way, except Sunday.—Special contracts will be made for cargoes, or large quantities of freight, on application to the superintendent.

Fares are Less when paid for Tickets than when paid in the Cars. 31 ly J. W. STOWELL, Sup't.

**BOSTON AND MAINE RAILROAD.** Upper Route, Boston to Portland via, Reading, Andover, Haverhill, Exeter, Dover, Great Falls, South & North Berwick, Wells, Kennebunk and Saco.

Summer Arrangement, 1846.

On and after April 13, 1846, Passenger Trains will leave daily, (Sundays excepted,) as follows:

Boston for Portland at 7½ a.m. and 2½ p.m.  
Boston for Great Falls at 7½ a.m., 2½ and 4½ p.m.  
Boston for Haverhill at 7½ and 11½ a.m., 2½, 4½ and 6 p.m.  
Boston for Reading at 7½, 9, and 11½ a.m., 2½, 4½, 6 and 8 p.m.  
Portland for Boston at 7½ a.m., and 3 p.m.  
Great Falls for Boston at 6½ and 9½ a.m., and 4½ p.m.  
Haverhill for Boston at 6½, 8½, and 11 a.m., and 4 and 6½ p.m.  
Reading for Boston at 6½, 7½ and 9½ a.m., 12 m., 1½, 5 and 7½ p.m.  
The Depot in Boston is on Haymarket Square.  
Passengers are not allowed to carry Baggage above \$50 in value, and that personal Baggage, unless notice is given, and an extra amount paid, at the rate of the price of a Ticket for every \$500 additional value.  
CHAS. MINOT, Super't.

**TROY AND GREENBUSH RAILROAD.** Spring Arrangement. Trains will be run on this Road as follows, until further notice, Sundays excepted.

Leave Troy at 6½ A.M.	Leave Albany at 7 A.M.
" " 7½ "	" " 8 "
" " 8½ "	" " 9 "
" " 9½ "	" " 10 "
" " 10½ "	" " 11 "
" " 11½ "	" " 12 M.
" " 1 P.M.	" " 1½ P.M.
" " 2 "	" " 2½ "
" " 3 "	" " 3½ "
" " 4 "	" " 4½ "
" " 5 "	" " 5½ "
" " 5½ "	" " 6 "
" " 6½ "	" " 7 "

The 6½ a.m. and 2 o'clock p.m. runs from Troy, to Boston runs.

The 12 m. and 6 o'clock p.m. trains from Boston runs.

Passengers from Albany will leave in the Boston Ferry Boat at the foot of Maiden Lane, which starts promptly at the time above advertised.

Passengers will be taken and left at the principal Hotels in River Street, in Troy, and at the Nail Works and Bath Ferry.

L. R. SARGENT, Superintendent.  
Troy, April 1st, 1846. 14 ly

**SUMMER ARRANGEMENT.—NEW YORK AND ERIE RAILROAD LINE,** from April 1st until further notice, will run daily (Sundays excepted) between the city of New York and Middletown, Goshen, and intermediate places, as follows:

FOR PASSENGERS—  
Leave New York at 7 A.M. and 4 P.M.  
" Middletown at 6½ A.M. and 5½ P.M.  
FARE REDUCED to \$1 25 to Middletown—way in proportion. Breakfast, supper and berths can be had on the steamboat.

FOR FREIGHT—  
Leave New York at 5 P.M.  
" Middletown at 12 M.  
The names of the consignee and of the station where to be left, must be distinctly marked upon each article shipped. Freight not received after 5 P.M. in New York.  
Apply to J. F. Clarkson, agent, at office corner of Duane and West sts.

H. C. SEYMOUR, Sup't.  
March 25th, 1846.  
Stages run daily from Middletown, on the arrival of the afternoon train, to Milford, Carbondale, Honesdale, Montrose, Towanda, Owego, and West; also to Monticello, Windsor, Binghamton, Ithaca, etc., etc. Agent on board. 13 if

**NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.**

On and after Friday, May 1st, 1846, the cars will run as follows:

Leave City Hall for Yorkville, Harlem and Morrianna, at 7, 8, 9, 10 and 11 a.m., and at 1, 2, 3, 30, 4, 30, 5, 6, and 6 30 p.m.

Leave City Hall for Fordham and Williams' Bridge, at 7, 10 and 11 a.m., and at 2, 3, 30, 5, and 6 30 p.m.

Leave City Hall for Hunt's Bridge, Bronx, Tuckahoe, Hart's Corners and White Plains, at 7 and 10 a.m., and at 2 and 5 p.m.

Leave Harlem and Yorkville, at 7, 10, 8, 10, 9, 10, 11, 10 a.m., and at 12, 40, 2, 3, 10, 5, 10, 5, 30, 6, 10, and 7 p.m.

Leave Williams' Bridge and Fordham, at 6, 45, 7, 45, and 10, 45 a.m., and at 12, 15, 2, 45, 4, 45, and 5, 45 p.m.

Leave White Plains, at 7 and 10 a.m., and at 9 and 5 p.m.

The freight train will leave the City Hall at 1 o'clock, p.m., and leave White Plains at 1 o'clock in the morning.

On Sundays, the White Plains train will leave the City Hall at 7 a.m. and 5 30 p.m.; will leave White Plains at 7 a.m. and 6 p.m.

On Sundays, the Harlem and Williams' Bridge trains will be regulated according to the state of the weather. 18







**LITTLE MIAMI RAILROAD.--1846.--**

Summer Arrangement.

Two passenger trains daily.  
On and after Tuesday, May 5th, until further notice, two passenger trains will be run—leaving Cincinnati daily (Sundays excepted) at 9 a. m. and 11 p. m. Returning, will leave Xenia at 5 o'clock 50 min. a. m., and 2 o'clock 40 min. p. m.

On Sundays, but one train will be run—leaving Cincinnati at 9, and Xenia at 5 50 min. a. m.

Both trains connect with Neil, Moore & Co.'s daily line of stages to Columbus, Zanesville, Wheeling, Cleveland, Sandusky City and Springfield.

Tickets may be procured at the depot on East Front street.

The company will not be responsible for baggage beyond fifty dollars in value, unless the same is returned to the conductor or agent, and freight paid at the rate of a passage for every \$500 in value above that amount.

W. H. CLEMENT,  
Superintendent.

**MACHINE WORKS OF ROGERS,**

Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

**Railroad Work.**

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,  
at 45 Paterson, N. J., or 60 Wall street, N. York.

**GEORGE VAIL & CO., SPEEDWELL IRON**

Works, Morristown, Morris Co., N. J.—Manufacturers of Railroad Machinery; Wrought Iron Tires, made from the best iron, either hammered or rolled, from 1½ in. to 2½ in. thick,—bored and turned outside if required. Railroad Companies wishing to order, will please give the exact inside diameter, or circumference, to which they wish the Tires made, and they may rely upon being served according to order, and also punctually, as a large quantity of the straight bar is kept constantly on hand.—Crank Axles, made from the best refined iron; Straight Axles, for Outside Connection Engines; Wrought Iron Engine and Truck Frames; Railroad Jack Screws; Railroad Pumping and Sawing Machines, to be driven by the Locomotive; Stationary Steam Engines; Wrought Iron work for Steamboats, and Shafting of any size; Grist Mill, Saw Mill and Paper Mill Machinery; Mill Gearing and Mill Wright work of all kinds; Steam Saw Mills of simple and economical construction, and very effective Iron and Brass Castings of all descriptions.

**NICOLL'S PATENT SAFETY SWITCH**

for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee.

G. A. NICOLLS,  
Reading, Pa.

**RAILROAD SCALES.—THE ATTENTION** of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st.  
Office, No. 3 North 5th street,  
Philadelphia, Pa.

**MARAMEC IRON WORKS FOR SALE.**

By Authority of a power of Attorney from Messrs. Massey and James, I will sell at Public Auction, at the Court House in the city of St. Louis, on **MONDAY, the 3rd day of November next**, the above named valuable **IRON WORKS**—together with **8,000 ACRES OF LAND**, more or less, on which there are several *valuable and productive Farms* open and in cultivation.

The Maramec Iron Works are situated at the Maramec Big Spring, in Crawford Co., Mo., and consist of **1 BLAST FURNACE; 1 AIR FURNACE; 1 REFINING FORGE**, with large Hammer for making Blooms and Anchovies; **2 CHEFFERY FORGES** for Drawing Bar Iron; **1 ROLLING MILL** for Rolling Blooms into Bars and Plates; **1 SAW AND 1 GRIST MILL**.

All within 300 Yards of the head of the spring. There are 2 large frame Coal Houses, and all other Buildings necessary, such as Shops and Houses for the workmen.

This Spring is one of the largest in Missouri, discharging at the lowest time 7,000 cubic feet of water per minute. The Ore Bank from which the Ore has been heretofore taken is about 600 yards from the furnace; it is the *Specular Iron Ore*, the best for making Bar Iron, and the quantity inexhaustible.—It is an Iron Mountain, 400 feet above the level of the Maramec River; the ore is entirely uncovered, and there is an easy descent and a good road from it to the furnace.

The lands have been carefully selected by one of the owners with a view to the interest and convenience of the Works, and are situated principally on the Maramec River and its tributaries, embracing the best bottom lands and water powers. The following detached tracts, comprized in the above quantity, were selected for the advantages they possess:

**183½ ACRES** in T. 40 N. of R. 8 W. in Sec. 3, near Wherry's Mill, in Osage Co.; entered to secure a very valuable Mill power on the Branch Spring and a good landing on the Gasconade River.

**80 ACRES** on Benton's Creek, 12 miles from the Works; entered to secure an extensive and valuable Ore Bank 2½ miles from the Maramec, at a point where there is ample water power.

**320 ACRES** in T. 38 N. of R. 4 W. in Sec. 22 and 23, affording an extensive and valuable water power on the Maramec river.

**160 ACRES** in T. 37 N. of R. 3 W. in Sec. 4, embraces two inexhaustible and valuable Ore Banks and is 1½ miles from Water power sufficient for a furnace and Grist Mill, and is distant 6 miles from the above site on the Maramec.

**80 ACRES** in T. 37 N. of R. 8 W. in Sec. 33, including an extensive bank of excellent Ore, and distant 1½ miles from water power on the waters of the Gasconade River, in Pulaski Co., sufficient for Furnace and Mills. All those Banks are of the same kind as the one at the Works, and deemed inexhaustible.

**1 LOT**, containing nearly one Acre, on the South Bank of the Missouri River, 4 Miles above the town of Hermann, purchased for a warehouse and

landing, and is one of the best landings on the River.

The lands above described are well timbered, and have been selected with a view to have an ample supply of wood and coal, for fences, building and other purposes. There are on the land valuable quarries of Limestone well adapted for Fluxes for the Ore, and also good quarries of Rock suitable for building. There are also on the land a great number the finest kind of Springs. A large portion of the lands are bottoms well adapted to the production of Corn and other crops. The Works are situated in a very pleasant and healthful part of the country. The Maramec ore is believed to be admirably adapted to the manufacture of steel.

A further description of the property at this time is considered unnecessary, as those wishing to purchase will no doubt view the property, which will be shown by the Agent, residing at the works.

The terms of payment required will be one-third of the purchase money in hand and the balance in three equal annual payments, secured by mortgage on all the property.

A more particular description of the property will be given, and further conditions of the sale made known, on the day of sale.

JNO. F. ARMSTRONG, Agent.

St. Louis, June 6, 1846.

The Louisville, (Ky.) Journal, Cincinnati Gazette, Tribune (Portsmouth, O.) Nashville Whig, Pittsburg Gazette, National Intelligencer, United States Gazette, (Phila.) Railroad Journal (N. Y.) and Boston Atlas, will publish the above once a week until the 20th day of October next, and send bills to this office for settlement, and mark price on first paper.

18:25

**THE SUBSCRIBERS, AGENTS FOR**

the sale of

Codorus,  
Glendon,  
Spring Mill and  
Valley,

Pig Iron.

Have now a supply, and respectfully solicit the patronage of persons engaged in the making of Machinery, for which purpose the above makes of Pig Iron are particularly adapted.

They are also sole Agents for Watson's celebrated Fire Bricks and prepared Kaolin or Fire Clay, orders for which are promptly supplied.

SAML. KIMBER, & CO.,

59 North Wharves,

Jan. 14, 1846. [1y4] Philadelphia, Pa.

**TO RAILROAD COMPANIES AND MANUFACTURERS** of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

je45 N. E. cor. 12th and Market sts., Philad., Pa.

**KEARNEY FIRE BRICK. F. W. BRINLEY**, Manufacturer, Perth Amboy, N. J. Guaranteed equal to any, either domestic or foreign. Any shape or size made to order. Terms, 4 mos. from delivery of brick on board. Refer to

James P. Allaire, } New York.  
Peter Cooper,  
Murdoch, Leavitt & Co.

J. Triplett & Son, Richmond, Va.

J. R. Anderson, Tredegar Iron Works, Richmond, Va.

J. Patton, Jr. } Philadelphia, Pa.  
Colwell & Co.

J. M. L. & W. H. Scovill, Waterbury, Con.

N. E. Screw Co. } Providence, R. I.  
Eagle Screw Co.

William Parker, Supt. Bost. and Worcester R. R.

New Jersey Malleable Iron Co., Newark, N. J.

Gardiner, Harrison & Co. Newark, N. J.

25,000 to 30,000 made weekly. 35 1y



### RICH & CO'S IMPROVED PATENT SALAMANDER SAFES.

Warranted free from dampness, as well as fire and thief proof.

Particular attention is invited to the following certificates, which speak for themselves:

#### TEST No. 10.

*Certificate from Mr. Silas C. Field, of Vicksburgh, Mississippi.*

On the morning of the 14th ult., the store owned and occupied by me in this city, was, with its contents, entirely consumed by fire. My stock of goods consisted of oil, rosin, lard, pork, sugar, molasses, liquors, and other articles of a combustible nature, in the midst of which was one of Rich's Improved Patent Salamander Safes, which I purchased last October of Mr. Isaac Bridge, New Orleans, and which contained my books and papers. This safe was red hot, and did not cool sufficiently to be opened until 16 hours after it was taken from the ruins. At the expiration of that time it was unlocked, when its contents proved to be entirely uninjured, and not even discolored. I deem this test sufficient to show that the high reputation enjoyed by Rich's Safes is well merited.

S. C. FIELD.

Vicksburgh, Miss., March 9th, 1846.

*Certificate from Judge Battaile, of Benton, Mississippi.*

In October last I purchased one of Rich's Improved Salamander Safes, which was in the fire at the burning of my law office, and several adjoining buildings in this place, on the 17th of November last, at about half-past one o'clock A. M. of that day. The building was entirely consumed; and I take pleasure in stating that my papers in said safe were preserved without injury. A receipt book which was in said safe, had the glue drawn out of its leather back by the heat, and the back broken; but the leaves of the book, and the writing thereon, were entirely uninjured; and some of the writing which was of blue ink, was also left wholly uneffaced and not in the least faded. Said safe was by the fire heated perfectly red hot, and I do not hesitate to say, that said safe is a perfect security against fire. But the safe tumbled over during the fire, and being heated red hot, the outer sheeting of the door became pressed in, and the bolts of the lock bent, so that it could not be unlocked, and I had to have it broken open.

JOHN BATTLE.

Benton, Miss., December 27, 1845.

*Still other Tests in the Great Fire of July 19, 1845.*

The undersigned purchased of A. S. Martin, No. 138 1/2 Water street, one of Rich's Improved Patent Salamander Safes, which was in our store, No. 54 Exchange place. The store was entirely consumed in the great conflagration on the morning of the 19th inst. The safe was taken from the ruins 52 hours after, and on opening it, the books and papers were found entirely uninjured by fire, and only slightly wet—the leather on some of the books was perched

he extreme heat. RICHARDS & CRONKHITE.

New York, 21st July, 1845.

One of Rich's Improved Salamander Safes, which I purchased on the 2d of June last of A. S. Marvin, 138 1/2 Water street, agent for the manufacturer, was exposed to the most intense heat during the late dreadful conflagration. The store which I occupied, No. 46 Broad street, was entirely consumed; the safe fell from the 2d story, about 15 feet, into the cellar, and remained there 14 hours, and when found, I am told, and from its appearance afterwards, should judge that it had been heated to a red heat. On opening it, the books and papers were found not to have been touched by fire. I deem this ordeal sufficient to confirm fully the reputation that Rich's safe has already obtained for preserving its contents against all hazards.

(Signed.)

WM. BLOODGOOD.

New York, 21st July, 1845.

The above safes are finished in the neatest manner, and can be made to order at short notice, of any size and pattern, and fitted to contain plate, jewelry, etc. Prices from \$50 to \$500 each. For sale by

A. S. MARVIN, General Agent,  
138 1/2 Water st., N. Y.

Also by Isaac Bridge, 76 Magazine street, New Orleans.

Also by Lewis M. Hatch, 120 Meeting street Charleston, S. C.

16 1/2

### CUSHMAN'S COMPOUND IRON RAILS.

etc. The Subscriber having made important improvements in the construction of rails, mode of guarding against accidents from insecure joints, etc.—respectfully offers to dispose of Company, State Rights, etc., under the privileges of letters patent to Railroad Companies, Iron Founders, and others interested in the works to which the same relate. Companies reconstructing their tracks now have an opportunity of improving their roads on terms very advantageous to the varied interests connected with their construction and operation; roads having in use flat bar rails are particularly interested, as such are permanently available by the plan.

W. Mc. C. CUSHMAN, Civil Engineer,  
Albany, N. Y.

Mr. C. also announces that Railroads, and other works pertaining to the profession, may be constructed under his advice or personal supervision. Application must be post paid.

### RAILROAD IRON AND LOCOMOTIVE

Tyres imported to order and constantly on hand

by A. & G. RALSTON

Mar. 20th 4 South Front St., Philadelphia.

### THE NEWCASTLE MANUFACTURING

Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

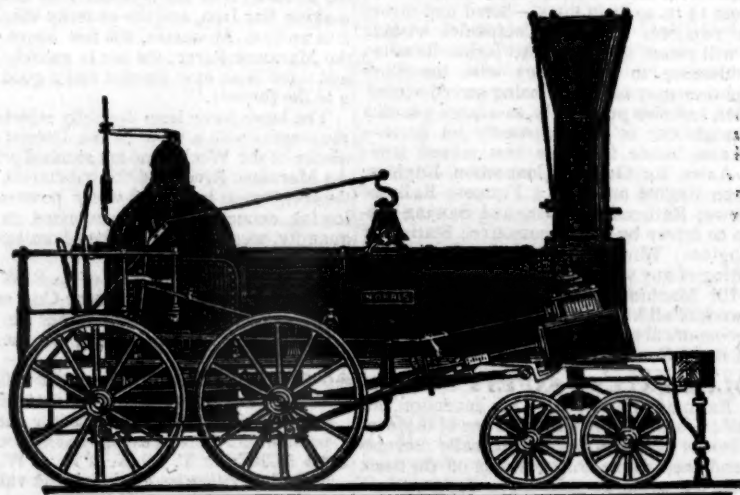
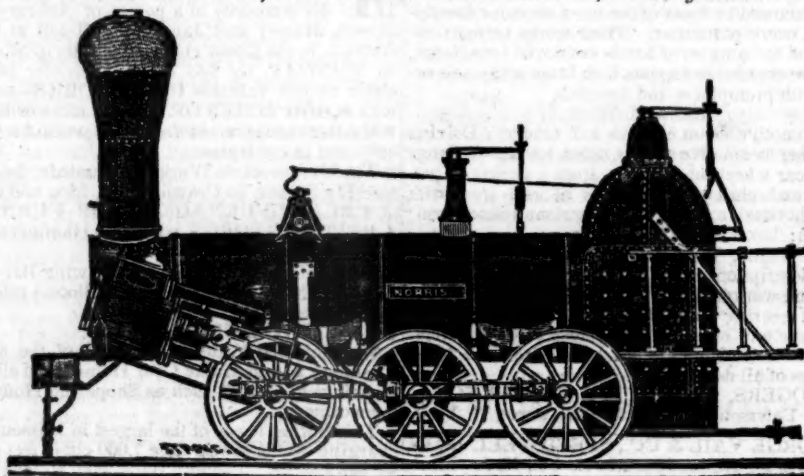
The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,

445 President of the Newcastle Manuf. Co.

## NORRIS' LOCOMOTIVE WORKS.

BUSH HILL, PHILADELPHIA, Pennsylvania.



MANUFACTURE their Patent 6 Wheel Combined and 8 Wheel Locomotives of the following descriptions, viz:

Class	1	2	3	4	5	6	inches Diameter of Cylinder,	×	20 inches Stroke.
"	2	14	"	"	"	"	"	×	24
"	3	14 1/2	"	"	"	"	"	×	20
"	4	12 1/2	"	"	"	"	"	×	20
"	5	11 1/2	"	"	"	"	"	×	20
"	6	10 1/2	"	"	"	"	"	×	18

With Wheels of any dimensions, with their Patent Arrangement for Variable Expansion. Castings of all kinds made to order: and they call attention to their Chilled Wheels for the Trucks of Locomotives, Tenders and Cars.

NORRIS, BROTHERS



**RAILROAD IRON.—THE SUBSCRIBER'S** New Rail Iron Mill at Phoenixville, Pa., is expected to be ready to go into operation by the 1st of September, and will be capable of turning out 30 to 40 tons of finished Rails per day. They are now prepared to receive orders to that extent, deliverable after the 1st of October next, for heavy rails of any pattern now in use, equal in quality and finish to best imported.

**PIG IRON**—They are also receiving weekly 150 to 200 tons of No. 1 Phoenix Foundry Iron, well adapted for light castings.

REEVES, BUCK & CO,  
45 North Water St., Philadelphia,  
or by their Agent, ROBT. NICHOLS,  
79 Water St., New York.

**RAILROAD IRON—1700 TONS VERY** Best English Rails, ready to be delivered.—These Rails weigh 60 lbs., the lineal Yard, are 3 inches deep; 4 inches deep at base; 2½ inches wide at top; 17½ feet long, except one-tenth of 15 and 12½ feet in length.

A first rate Steam Pile Driver built by "Dunham & Co.," has never been in use, is in perfect order, and for sale a bargain; also 12 Railway Passenger Cars that have never been used, which will be sold very low.

DAVIS, BROOKS & CO.,  
June 1. 30 Wall Street.

ENGINEERS' AND SURVEYERS'  
INSTRUMENTS MADE BY  
EDMUND DRAPER,  
Surviving partner of  
STANCLIFFE & DRAPER.



No 23 Pear street,  
1y10 near Third, below Walnut,  
Philadelphia.

**PATENT INDESTRUCTIBLE WATER** Pipes. The subscribers continue to manufacture the above Pipes, of all the sizes and strength required for City or Country use, and would invite individuals or companies to examine its merits.—This pipe, unlike cast iron and lead, imparts neither color, oxide or taste, being formed of strongly riveted sheet iron, and evenly lined on the inside with hydraulic cement. While in the process of laying it has a thick covering externally of the same—thus forming nature's own conduit of stone. The iron being thoroughly enclosed on both sides with cement, precludes the possibility of rust or decay, and renders the pipe truly indestructible. The prices are less than those of iron or lead. We also manufacture Basins and D. Traps, for Water Closets, on a new principle, which we wish the public to examine at 112 Fulton street, New York.

J. BALL & CO.

**WILLIAM R. CASEY**, Civil Engineer,  
New York. Address Box 1078, Post-office.  
New York.

### A CARD.

#### TO THE CITIZENS OF NEW YORK.

After a residence of over twenty-one years in this city, I find it for my interest to seek, in a neighboring city, a new home, where I hope to derive more ample reward for honest and unremitting industry and enjoy the satisfaction of knowing that my past labors have contributed somewhat to the general prosperity, if not materially to my own.

Having, for so long a period, participated in the excitements and activity of this growing city, and witnessed its prosperity and rapid advancement—yet without sharing largely in its enjoyments—I cannot leave it without regret, nor without acknowledging my obligations, and gratitude, to the many kind friends, who have at all times cheered and encouraged me on; but more especially to those few who so generously sustained me at a period when all was lost, save a determination to succeed.—

Here I have labored for the general prosperity; and have the vanity to believe that the great destiny that awaits you has not been retarded by my efforts; there I shall provide the comforts required by the body—and therefore solicit in my new habitation, and new vocation, a continuance of your approval, and an increase of your patronage. I shall feel, while I labor for the wants of the outer man—while I provide and supply, in a superior manner, the comforts and social enjoyments of life—that I am but "laboring in the vocation" that contributes "the greatest good to the greatest number."

In the "FRANKLIN HOUSE," 105 Chestnut street, Philadelphia, heretofore kept by Messrs. J. M. SANDERSON & SON—my future residence after the 1st of July—I hope to meet many of those faces which, during a long residence here, have become familiar to me, and grasp many an honest hand, and exchange many a kind salutation, with warm and sincere friends.

The house is now undergoing a thorough renovation, and extensive improvements are to be made, by the addition of a convenient and well arranged dining room for gentlemen, several new parlors, and many new and convenient lodging rooms. It will be newly painted throughout, and mainly refurnished, and thus be placed on a footing with the best Hotels in Philadelphia. I shall be aided in its management, by Mr. JAMES M. SANDERSON, long favorably known as one of the gentlemanly proprietors of the FRANKLIN HOUSE, and as a caterer unsurpassed in the country; and also by the celebrated *Chef de Cuisine* PELLETIER, who has also been connected with the house during the past four years, and whose superior, as an *artiste* in his line, in this country, is yet to be found.

With such a house, and such aid in its management, I do not hesitate to say, to those friends and acquaintances who have known me during the past twenty years, and to others who have not, that they will find good accommodation, good fare, and all desirable attention to their wishes when they call at the FRANKLIN HOUSE, and upon their obedient servant,

D. K. MINOR.

#### Mails upon the English Railways.

Government has agreed to pay the Chester and Holyhead railroad for the carriage of the mails £30,000 annually for five years, to continue seven years longer if they do not pay a dividend of 5 per cent. and never to be less than 1s. 2 1-16d. per mile.

We need not wonder then at the enormous works undertaken upon this route, as shown in the extract below. The length of the road is 84 miles.

**Chester and Holyhead.**—The progress of the work in forming this line excites great interest, owing to the gigantic character of the cuttings, viaducts, and tunnels. The most important works are those in operation between Weeg, to the Menai straits, facing the Britannia rock, where Stephenson's iron tunnel is to bridge the Menai. The contract between those distances, nearly 12 miles in length, and passing through the great Bangor and Carnarvon mountains, is being executed by Messrs. Thomas Jackson and son. Workmen are busily engaged in almost every part of the line. There are no fewer than three tunnels in the contract, the completion of which will occupy two years and a half. The first runs under Llandegai hills, commencing at the west end of what is

termed Ogwen cutting, and its length is 440 yards. A heading has been made through it, and bricklayers are employed lining it with brick work. The shafts are completed. The next tunnel passes under the Bangor mountains at a depth varying from 160 feet to upwards of 200, and its length is nearly 1,000 yards. Here the work is excessively laborious—the tunnel having to be cut through solid rock, chiefly of iron slate, the dislodgment being entirely effected by blasting, consequently great care has to be exercised.—The whole of this range of mountains consists of rocks to the summits, not more than two feet of earth being found over any portion of them. The headings are in a very advanced state, and nearly all the shafts finished. The third tunnel is under the Ffriddsedd, or Carnarvon mountains; it has four shafts, and is to be 720 yards long. The work is equally severe, passing through rock of the same description as that at Bangor tunnels. Only the first named tunnel will be bricked in; the other two will remain in the natural state as cut through. The line is carried over the Ogwen and Cegin river and valley by two extensive viaducts. The former, over the Ogwen, consists of 24 arches of masonry, the centre arches being 35 feet in height; that over the Cegin and valley, has nine arches, 62 feet above the level of the stream, and about 200 yards in length. The foundations of the buttresses of the arch are laid 35 feet deep. The other works are progressing satisfactorily.

**Glasgow Electric Clock.**—The public is aware of Mr. Bain's invention of the electric clock, which derives its motive power from currents of electricity in the earth. Mr. Bain has invented and patented another kind of electric clock, which we had the pleasure of examining on Wednesday, when it was exhibited here by the inventor to a few scientific gentlemen—the clock being in Glasgow, and the pendulum in Edinburgh! By means of the electric telegraph along the railway, constructed by Mr. Bain, he intimated his wish that the pendulum at the other end of the line should be put in motion. The answer was given with the rapidity of thought: for the machinery in the clock instantly began to move. To be more particular—the clock was placed in the station house in Glasgow; the pendulum belonging to it in the station house in Edinburgh—the two being 46 miles apart. They were joined by means of the wire of the telegraph, in such a manner as that, by a current of electricity, the machinery in the clock in Glasgow was made to move correctly according to the vibrations of the electrical pendulum in Edinburgh. Thus when the pendulum in Edinburgh moved to the left, a magnet in the clock in Glasgow moved to the left; and when the pendulum moved to the right, the magnet likewise moved to the right, the movement being produced instantaneously by the rush of the electric current along the wire. The motions of the pendulum in Edinburgh being thus faithfully represented by the magnet in the clock, time was accurately kept, and indicated on the dial in the usual way. The same result



could, at one and the same time, have been produced in a clock at the Linlithgow, and another at the Falkirk station, as well as at the Glasgow terminus; that is to say, the Edinburgh pendulum could have equally regulated all the three, which would thus have moved together like one machine. In like manner, Mr. Bain informs us, were the telegraphic wires extended over the whole of Scotland, and every railway station or town on the line had its own electric clock, the pendulum at Edinburgh would propel and regulate them all. And still further, were England and Scotland united in one grand chronometrical alliance, a single electrical pendulum of this description, placed in the observatory at Greenwich, would give the astronomical time correctly throughout the whole country.—*Scotch Reformers' Gazette.*

**Speed and Power of the Locomotive, the 'Great Western.'**—We noticed, in last week's Journal, the performance of a powerful new locomotive engine, built by the Great Western railway company, which, we are informed, is incorrect in several essential particulars. It is there stated that the engine and tender weigh "56 tons," and that it was ascertained the engine could, with a load of 140 tons, travel at the average speed of 55 miles per hour. This is incorrect. The engine and tender, taking the average weight of the latter with her complement of water and coke over the whole distance run, weigh 43, and not 56 tons; and the average speed to and from Swindon, deducting time lost in stoppages, was 50 and not 56 miles per hour. Our notice states that the engine, without her water, weighs 36 tons, whereas it is, with water, 28½ tons only. Her maximum speed, with the 140 tons, on a falling gradient of 4 feet per mile, was 26 miles per hour. But the trip in question was an experimental one, for the purpose of ascertaining how the engine would work with a heavy passenger load. It was found that the engine did not work at the required pressure; the blast pipe was therefore reduced, and she is now in very good working order. She has since carried the ordinary express train to Exeter, 194 miles, in 183 minutes, or at a rate of 63 miles per hour; but even this does not fairly show the vast capabilities of this extraordinary machine. Excluding the comparatively slow rate at which the train runs down the inclines and the loss of time in arriving at and leaving stations, the average rate of travelling will be from 63 to 69 miles per hour. On Thursday, the express train, weighing 90 tons, and worked by the same engine, travelled from Didcot to Paddington, 53 miles in 51 minutes—that is, from station to station. The speed between the 47th and 2d mile posts averaged 70 miles per hour; and yet a few years since the world was unwilling to believe that 20 or 30 tons could be taken at 13 miles per hour by a locomotive. Learned men ridiculed the absurdity of the proposition. They lectured and wrote with great display of scientific knowledge about adhesion and the resistance of the wind, and demonstrated "by mathematical data" that it was absolutely impossible to reach a velocity

of 20 miles an hour with 20 or 30 tons.—Such is the correctness of human calculations, as proved in practice; and who shall say that even now we have arrived at the maximum safe speed of transit—already have we beaten the bird and the race-horse in speed, with enormous weight, and equalled the lightning's flash in transmitting intelligence; and science may have yet in store for us materials which will cause posterity to regard our present discoveries, as only the simple elements of knowledge.—*Atmospheric Railway Gazette.*

#### Miscellaneous Items.

The Delaware and Raritan canal, and Camden and Amboy railroad and Transportation co., have declared a semi-annual dividend of 5 per cent, payable on the 17th inst.

The Louisa (Va.) railroad has declared a dividend of 3 1-2 per cent.

The work upon the Cheshire railroad, is let, with the exception of a short distance through Keene, from Ashburnham to a point about 2 miles south of the village of Walpole. This road is going on well, and although many parts of it will be very costly on account of the great quantity of rock cutting; we hope to see it in successful operation in the course of 1847.—This is the most expensive work of the kind for the distance, now in progress in New England. If however, it can be made to connect with the road, the stock will be profitable.

**Our Railroad.**—The engineer of the Rutland road, Mr. Gilbert and his assistants, having as we understand, finished the survey from Middlebury to Burlington, are proceeding on to Rutland. This survey, we understand from Mr. G., is nearly final for the contracts. Judge Follet is now at the east awaiting the decision of the New Hampshire commissioners as to the terminus of the Cheshire road. Should this be satisfactory, the strongest hopes may be indulged that the first assessment will be cheerfully paid, and the grading commenced this season. But should not a conjunction with the Cheshire be agreed upon, and the friends of the Rutland road be obliged to look to another quarter for assistance, there are strong reasons for believing that it can be obtained, and to an amount which will place the success of the road beyond a peradventure. Despair is actually out of the question. Western Vermont has decreed that she will have a railroad from some quarter, although patience may have a tolerable work to do before it is accomplished.—*Northern Galaxy.*

**Railroad Matters.**—The legislature of New Hampshire has granted a charter to the Claremont people for a railroad to connect with the Vermont Central at Windsor, and run to the northern termination of the Cheshire road.—This seems to suspend the necessity of extending the Central road below Windsor, and well accommodates the business of Claremont, which has already become a pretty important manufacturing town and will doubtless have that part of its business vastly increased after the opening of the railroad.—*Watchman and Journal.*

**Connecticut and Passumpsic Railroad.**—Engineers are employed in making a locating survey, between Wells river and St. Johnsbury. The St. Johnsbury Caledonian states that the survey below Wells river to Orford has been completed, and a portion of the section is to be put under contract forthwith. The

whole survey of the route, to Derby line, is to be completed this season.—*Boston Courier.*

**Saxonville Branch Railroad.**—The celebration of the 4th, and of the opening of railroad to Saxonville, took place with great eclat on Saturday last. The procession formed at 11 o'clock, on Chapel hill, under the escort of the Framingham volunteers, and marched to the depot to greet, on the arrival of the cars, the invited guests, the president and directors of the Manufacturing and Worcester railroad companies.

Speeches were made by the president of the day, the president of Worcester railroad, and others.

Of the many villages rapidly rising to notice and importance in the vicinity of Boston, under the influence of Yankee enterprise and manufactures, Saxonville is one of the most thriving. The population of the village is rapidly increasing, and already numbers 2,000 within 3-4ths of a mile from the centre. The completion of the railroad has given a new impulse to business, and promises still further to increase the importance and growth of the place. The engineers and others engaged in the Long Pond water works have been unable to lease dwellings here. Every tenement is taken.—*Boston Traveller.*

**Worcester and Nashua Railroad.**—At the annual meeting of the stockholders of this corporation, a vote was passed instructing the new board to suspend all operations on the road, and the treasurer to pay all the debts of the company, and to hold the balance of the property in trust till the sum of \$700,000 shall have been actually and unconditionally subscribed.

**Norwich and Worcester Railroad Company.**—The following gentlemen were elected directors of this company, on the 8th instant, viz: John C. Holland, John A. Rockwell, Wm. P. Greene, Daniel L. Trumbull, of Norwich; Alexander DeWitt, of Oxford; Amos Binney, Wm. Ward, Richard S. Fay, Franklin Haven, of Boston; Wm. Aug. White, Joshua N. Perkins, Elihu Townsend, of New York.

At a subsequent meeting of the board, John C. Holland was unanimously re-elected president.

**Hartford.**—\$100,000 was subscribed at Hartford to the stock of the Hartford and Bristol railroad, the day the books were opened.

\$40,000 of the stock of the Hartford, Danbury and New York railroad, was subscribed by three gentlemen of Hartford, and it was supposed many others would follow the example, though perhaps not in amount.

**New York and Erie Railroad.**—The commissioners appointed to locate the route for the New York and Erie railroad in the counties of Sullivan and Broome, are to meet for that purpose as follows: In Monticello, on the 5th of August; at Harpersville 10th of August; and in Binghamton on the 12th of August.

**Atlantic Railroad, and Mail Route.**—We perceive that the town council have called a meeting of the citizens of the town and the adjacent districts, for Monday, the 6th day of July, for the purpose of considering the propriety of petitioning the legislature for a renewal of the charter of the "All Saints and Charleston railroad company." We hope the meeting will be well attended from all the parishes. The day has arrived when the people in this section of the state need to be up and doing, if they ever intended to move in the matter. The recent meeting at Sumpterville



was an enthusiastic one, and was well responded to by the people of Darlington, and others interested in having a road connect with the Camden route—and the stockholders in a meeting at Wilmington on the return of their Summer delegation, were much elated at the prospect of connecting their road with that of Charleston, even by the circuitous route proposed.

We again repeat that nature seems to have graded the face of the country from Wilmington to Hob-Caw point, now Allston's, 2 miles below this town, a distance of 110 miles without the obstacle of a single river, except the Cape Fear, at the town of Wilmington. The Wilmington company can and will bring their road to the South Carolina line, Georgetown and All Saints can bring it to Georgetown, and St. James, Santee and the company will take it to Charleston—and thus complete the Atlantic route. The stock in such a road will be as good as any in the country. Let us lose no time in obtaining a renewal of our charter. If we are superseded by a charter by war of Darlington, we are thrown back in our work a quarter of a century.—*Georgetown (S. C.) Observer.*

**A Grand Work.**—In a month the Macon and Western railroad will be in operation its entire length to Atlanta. "There will then be (says the Savannah Republican) a connected line of communication from Savannah, a distance of three hundred and seventy-two miles, stretching diagonally across the state to the Oostenaule river, within 40 miles of the Tennessee line. This road passes through many of the most populous and wealthy counties of the state. It will secure (or rather ought to secure) to Savannah, the trade of nearly all middle and Western Georgia and eastern Alabama, and will enable our merchants to compete for that of the northwestern counties, as well as of east and middle Tennessee and north Alabama."

**Railroad Break.**—Lyman A. Gouch of Springfield has invented an improved break for railway cars. The breaks may be applied to the locomotive and every car in the train, at once, and by one man—by the engineer or by another person. It appears to be similar to an invention recently noticed in New York. It is stated that Mr. G. has also invented a new rail and a new car wheel, designed to prevent a car running off the track. He should now invent a faithful switch-tender, and many of the ordinary railroad accidents would be averted.—*Northampton Gazette.*

**Michigan Railroad Sale.**—We are sorry to hear again unfavorable reports in regard to the sale of the Central railroad. There is too much reason to apprehend, we understand, that no sale will be effected. The corporators are disposed to purchase the road, but it is understood that the bondholders insist upon such terms as render it impracticable. They are under an impression that whether the railroad is sold or not, their interest will be promptly and fully paid. Everybody here knows that this will not be realized. Yet the official state paper constantly asserts it, and it is supposed to speak by authority. The result may be to defeat the sale. Such is clearly the design.—*Detroit Adv.*

**Railroads to and through Vermont.**—The Adams railroad, from Pittsfield to the Vermont line in Pownal, is under contract to North Adams, and will be completed to that place early next year. The road is designed to connect with the Western Vermont road, through Bennington, to Rutland, and with the help of

the Housatonic and New York and New Haven, or Harlem roads, will make a very direct and easy route, by which the people of western Vermont can reach the city of New York.

The Connecticut and Passumpsic rivers company, will it is understood, soon put under contract about 40 miles of the road, probably the portion between the mouth of White river and the village of Wells River. It is said that the aggregate cost for this distance, will not exceed \$800,000 which is about the amount of their present subscription.

The Northern railroad from Concord to the western boundary of Labanon, is under contract for the whole distance, and it is understood, will be completed early next spring.—This road not being very expensive, and receiving as it will, the whole business of the Vermont Central and Connecticut and Passumpsic rivers roads, cannot fail to be very profitable.

The Vermont Central railroad is under contract, its whole length 117 miles, from Windsor to Burlington, and about 2,000 hands are employed upon it. Certain parts of this road will be very expensive, particularly the 14 miles between Windsor and White river, and the first 10 miles east from Burlington. There has been some complaint from a portion of the contractors, that they could not get pay for their work as stipulated in their contracts.—This probably arises from the fact that the subscribers have not paid their instalments with much promptness. When this will be completed is very doubtful, as a very large additional subscription will be required to finish the work.

The Champlain and Connecticut river railroad, from Belknap Falls through Rutland to Burlington, a distance of 116 miles, has been located for about 55 miles, and if a satisfactory arrangement can be made for a connection with the Cheshire road, a portion of it will be very soon put under contract. The engineer's (Mr. Gilbert,) estimates of the cost of grading this road made upon his preliminary survey were considered very low, but as great improvements have been made in the final location, it is fully settled that his original estimates were too high. This road has labored under very great difficulties. When finished, no road in Vermont can ever be as profitable as the Rutland, for none in proportion to the distance, can be constructed as cheaply, or passes through a country as rich in agricultural or mineral wealth.

The Champlain and Ogdensburg railroad company has been organized, the whole capital stock, \$2,000,000 having been unanimously subscribed. About \$500,000 were subscribed by the residents of the state of New York. \$1,000,000 were taken, as we are informed, by the following persons:—S. F. Belknap, \$100,000—S. F. Belknap and co., \$50,000—Chas. Paine, \$200,000—Sam'l M. Felton, \$100,000—S. S. Lewis, \$100,000—and James C. Dun, \$100,000. This work is a very important undertaking, and when completed, as we hope to live to see it, will be of immense public benefit.—*Belknap Falls Gazette.*

The Western Vermont railroad company has not been authorized, nor has the Vermont and Canada railroad, chartered from Burlington, through St. Albans, to Canada line.

#### Railway Signals.

We find in the Railway Chronicle for 2nd May, the plan of "railway signals," introduced upon some of the English railways, by Mr. Hutton Gregory,

the engineer of the London and Croydon railway.—We deem it a matter of so much importance to the proprietors of, as well as to the passengers upon, our American railroads, that we give the description entire, together with the illustrations, in the hope that some of our correspondents will urge the adoption in this country, of this, or some better plan by which accidents may more seldom occur, if not entirely avoided. No one at all observant of the passing events of the day, will question the necessity of the adoption of measures to prevent accidents on railroads. They are quite too numerous already. Yet they are increasing in a ratio, apparently much greater than that of the system itself, whereas there should be a steady decrease, as we have more experience.

"Foolish, ill-concocted schemes for insuring safety, or at least for inculcating a belief in safety, even where it may not exist, are so multifarious and manifold, that it is very agreeable, in the exercise of our editorial functions, to be able now and then to recommend for general adoption, and very heartily, without reservation, some plain, practical, unquestionable improvement. We have been watching the progress of the fixed station signals through various phases of improvement, and we think we are now able to recommend for general adoption on all railways not yet supplied with a satisfactory set of signals, the following, which we have seen in daily use with progressive improvements for a considerable time.

"These signals have the advantage of being simple, conspicuous and unmistakable—they act in the same manner both by night and by day—they are not liable to get out of order—they are of two classes, those at stations merely, and those at junctions. We to-day only describe the first of the class.

"These signals are of a class called semaphore signals, similar to what were formerly used as telegraphs by the admiralty.—They were introduced into railways by Mr. Hutton Gregory, the engineer of the Croydon railway, on that line, and they have since been extended along the Brighton and South Eastern, and other lines. They have this merit—that the signal depends neither upon color nor shape, but solely upon the position of an arm, which may be as large and as conspicuous as you choose.

"The general aspect of the station signal is an upright post of great height, on either side of which is an arm like that of a man. The right arm refers to the right line of the railway, whether up or down. The arm up in a horizontal position on either side means that a train on that side must "stop" at that station—not to stop would imply the greatest penalty that can be inflicted. The arm inclined downwards implies that you may go on, but "slowly"—and closed down means "right" or "do as you please." The height of the post must be conspicuous enough to be seen at a distance, and the arms also must be of a size sufficient for the same purpose. The size given with our engravings have been found quite adequate to that purpose.

"At night however, the signals are by colored lamps—red, green and white corresponding to stop, slow, and right. These

Fig. 1.

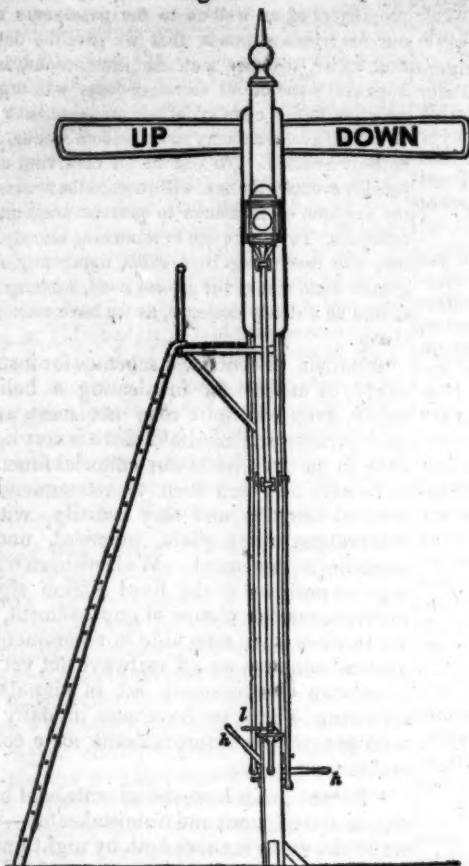


Fig. 2.

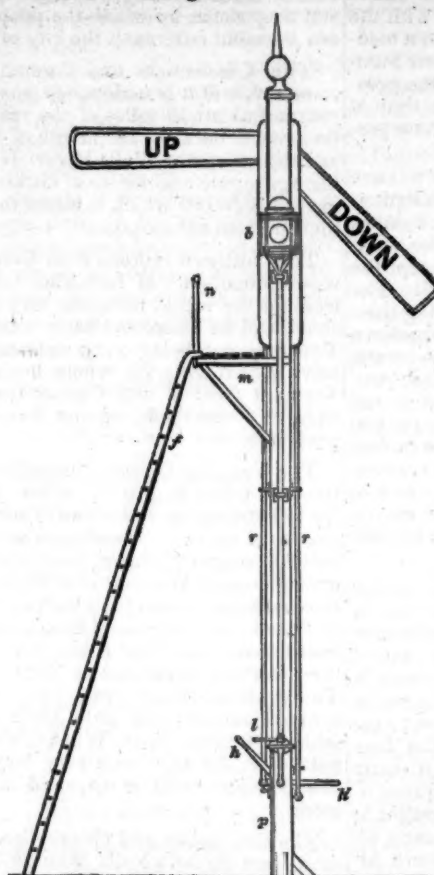
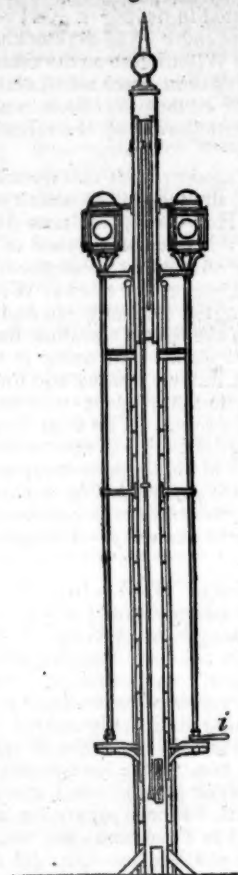


Fig. 3.



lights are worked by a mechanism precisely similar to the arms.

"Fig. 1. Elevation of semaphore signals. The arms being placed in the position indicating 'stop.'"

"Fig. 2. Ditto, an arm indicating 'caution,' or 'slacken speed.'"

"Fig. 3. End view, showing the lamps.

"*p* is an upright post, firmly staked into the ground; *h h*, two hand levers connected to the rods, *r r*, which rods are at upper ends, attached to the blades or signal boards up and down. *h* works the blade up, and *h'* the down. The hand levers are retained in a fixed position by springing into notches on side of upright post, as seen in fig. 3. *s s*, rods communicating with the handles *l l* to the signal lamps *b b b*. The handles *l l*, also springing into notches made in the disc round which they travel. *f*, an iron ladder attached at top to the two rods *n n*. This ladder at its upper end is made to slide up on the rods *n n*, by which means the bottom can be brought close up to the post, so as to be out of the way when not required. *m*, a platform to facilitate the trimming and cleaning the lamps. The signal boards are used by day, and the lamps by night.

"These signals are, as we have said, originally the invention of Mr. Hutton Gregory; and, as we shall know on a future occasion, the combination of them so as to work at junctions, is an elegant and valuable combination, calculated to avoid danger in the highest degree that any mechanism can be conceived to accomplish.

"The mechanical construction of these signals was intrusted to Messrs Stevens and Sons, of Darlington works, Southwark; and many of the details and improvements which have made the invention the practical and perfect thing which it is have been added by them. The last steps of improvement in practical usefulness consist in the substitution of joints and levers, instead of wood wheels and ropes, for working the arms, parabolic lamps with ten inch reflectors, with the platform, guard rails, and ladder for cleaning the lamps. All these minor arrangements thus brought to perfection gives the machine that practical value which enables any company to adopt the whole plan at once, without doubt as to its effect or difficulty or delay in carrying it out.

"The engine drivers and guards are most easily instructed in its use. The engine driver invariably takes the signal from the left hand side of the post, as seen by him approaching it, so that wherever the signal post may be placed, and whether with single or double arms, he cannot possibly be confused or mistaken, for he has only to attend to one fixed rule—to look to the semaphore arm on his left hand. When the arm is extended at right angles, it is for stopping the engine; when depressed to an angle of 45°, for caution, or to slacken speed; and when the arm or semaphore is within the case, entirely concealed from view, and only the upright post visible, it indicates that the road is clear.—At night the signals are given with the parabolic reflecting lamps, a red light for danger

—green for caution—and white for all right; and Stevens and Sons' large parabolic reflecting lamps are so powerful, and their arrangement in placing them near the top of the post renders them so distinct from the station or other lights that may be near them, that the night signals, red, green, and white, are distinctly seen, where curves and cuttings do not interfere, for two or three miles. This arrangement is so simple, that it is at once comprehended by the engine driver or signal man, and at the same time it is so decided, that it cannot possibly be misunderstood; this fact has been fully exemplified on the South Eastern railway, for since the semaphore signals have been introduced on that line (nearly four years) there have been fewer accidents than on any other line of the same length in the kingdom; and not one that has occurred can be attributed in a single instance to any defect in the working of the semaphore signals.

The price for the semaphore day and night station signals, with two semaphore arms, and two large parabolic lights, platform, ladder, and apparatus complete, we believe is about £30; as this answers for two signals, one for the up and the other for the down line, and is all that is required at a station, it amounts to £15 per signal; and taking the strength and durability into consideration, renders them most economical and complete. The facilities for manufacturing these signals are such as to enable the manufacturers to supply twenty of them in as many days if required.



Correspondents will oblige us by sending in their communications by Tuesday morning at latest.

### PRINCIPAL CONTENTS.

A card to the citizens of New York.....	453
Mails upon the English railways—Chester and Holyhead.....	453
Glasgow electric clock.....	453
Speed and power of the locomotive—the 'Great Western'.....	454
Miscellaneous items.....	454
Railway signals [with cuts].....	455
Railroad advertisements.....	457
Hallette's atmospheric railway.....	457
Principles of railway management—passenger traffic, concluded.....	457

### AMERICAN RAILROAD JOURNAL.

PUBLISHED BY D. K. MINOR, 23 Chambers street, N. Y.

Saturday, July 18, 1846.

**THE RAILROAD JOURNAL** will hereafter be published *simultaneously* in New York and PHILADELPHIA. The editorial department will as heretofore, be under the direction of the subscriber, aided by his former associate Mr. George C. Schaeffer, and other gentlemen of ability connected with the profession—and renewed efforts will be made to render it *more* worthy of the rapidly increasing support which it is now receiving.

Engravings and illustrations will be more frequently given, and expensive maps will be occasionally prepared, showing the progress of the railway system, one of which, showing the proposed route of steam communication from China, across the isthmus, and through the United States, to England, by Edward McGeachy, Esq., of Jamaica, is now in the hands of the artist, and will be ready in a few weeks; and others will follow.

The office in New York will remain for the present, at 23 Chambers street, and be in charge of Mr. Egbert Hedge, long connected with the work—who is authorized to transact business for me.

The office in PHILADELPHIA will be at the FRANKLIN HOUSE, 105 Chestnut street, under the direction of the editor and proprietor, where all letters and communications by mail, and all exchange papers and periodicals may be hereafter addressed to

D. K. MINOR.

The editor of the Railroad Journal presents his compliments to his numerous subscribers and friends and assures them that he will be always gratified to see them at his new office and home, the FRANKLIN HOUSE, late SANDERSON'S, 105 Chestnut street, Philadelphia. He will be found at home.

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The improvement consists in being able to use either end of the screw, as occasion requires.

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Take Cars to Xenia, 65 miles; take Stage to Mansfield, 88 miles; thence by Cars to Sandusky, 56 miles to the Lake; thence Steamboat to Buffalo, 230 miles.

Fare from Cincinnati to Sandusky.....\$8 00  
" " Sandusky to Buffalo, Cabin..... 6 00  
" " " " " Steerage..... 4 50

Fare by this route, although the cheapest across the state, will be reduced in a short time, railroad lengthened, and speed increased.

Leave Cincinnati in the morning, arrive at Columbus at night.

Leave Columbus in the morning, arrive at Sandusky same day.

Leave Sandusky, by Boat, in the morning, arrive at Buffalo next morning in time for the Cars north and east for Niagara Falls, Canada, Saratoga Springs, Troy, Albany, Boston, New York, Washington, or Philadelphia.

Passengers should not omit to pay their fare through from Cincinnati to Sandusky, or from Columbus to Sandusky via Mansfield; as this route is the only one that secures 56 miles [this road is run over in 2h. 50m.,] most railroad which is new, and is the shortest, cheapest and most expeditious across the state.

Fares on the New York railroads are about to be reduced.

B. HIGGINS, Sup't, etc.

M. & S. C. R. R. Co.

Sandusky, Ohio.

### NEW RAILROAD ROUTE FROM Buffalo to Cincinnati.

Passengers destined for Columbus and Cincinnati,

O., Louisville, Ky., St. Louis, Mo., Memphis, Tenn., Vicksburg, Natches, New Orleans, and all intermediate ports, will find a new, and the most expeditious and comfortable Route, by taking Steamboat at Buffalo, landing at Sandusky City, Ohio, distance.....230 miles.

From thence by Cars, over the Mansfield Railroad which is new and just opened [laid with heavy Iron,] to Mansfield, distance..... 56 "

Thence by Stage via Columbus to Xenia over gravel and Macadamized Road, (the best in the state,) in new coaches, distance..... 88 "

Thence, over the Little Miami Railroad, from Xenia to Cincinnati, distance.... 65 "

#### TIME.

From Buffalo to Sandusky..... 24 hours.

Leave Sandusky 5 a.m. to Columbus.... 14 "

From Columbus to Cincinnati..... 15 "

Or say 30 hours from Sandusky to Cincinnati over this route, including delays.

#### FARE.

From Buffalo to Sandusky, Cabin.....\$6 00

" " " " " Steerage..... 3 00

" Sandusky to Columbus..... 4 50

" " " " " through to Cincinnati..... 8 00

Passengers should not omit to pay their fare through from Sandusky City to Cincinnati and take receipt availing themselves of the benefit of a contract existing between the said Railroad and Stage Co's, securing 121 miles travel by good Railroad and 88 miles by Stage, in crossing from Lake Erie to the Ohio river, in the space of 30 hours.

Passengers destined for St. Louis, or any point below on the Mississippi, will save by taking this route, from 4 to 6 days time and travel, and nearly half the expense, over the Chicago and Peoria route to the above places.

Fare by this route, although the cheapest, will in a short time be reduced, Railroad lengthened, and speed increased.

B. HIGGINS, Sup't, etc.

M. & S. C. R. R. Co.

Sandusky City, Ohio.

### Hallette's Atmospheric Railway.

A model of this mode of propulsion, is exhibiting near the Rosemary branch at Peck-

ham. It consists of a tramway of about 120 yards in length, upon a part of which a tube of about 50 yards in length is laid, over which a carriage capable of holding six or eight persons runs. The tube is exhausted by means of a small steam engine; there are two valves near each end of the pipe, and one in the centre; those at the ends close the pipe while the air is being exhausted. The piston, which passes through the pipe, is connected with the carriage by means of a "coultter," which is a broad steel plate, about three-eighths of an inch in thickness at the widest part, tapering from the centre like a knife to both edges; it stands perpendicularly from the piston in the pipe, and is attached to the carriage. In its course it slightly opens, and passes between the lips of the tube, as the piston is propelled from one end of the pipe to the other. The "lips," by their elasticity, close the longitudinal opening in the pipe and render it air-tight, at the same time admitting the passage of the thin "coultter" between them, with very little friction. The means used by M. Hallette differs essentially from that of Samuda; the latter has a valve with a longitudinal hinge, which is raised up by the piston rod or "coultter," to let the atmospheric air in behind and force on the piston; while the valve of the former closes the aperture by means of two caoutchouc hoses, ("lips,") and covered with leather on the sides. These are inflated by forcing air into them, and they are retained in their proper places over the longitudinal opening in the metal pipe by means of circular longitudinal cavities cast in the upper part of it to receive them. These cavities close on the top to nearly three-quarters of an inch, so that the slit underneath them in the metal pipe is about half an inch wide, instead of two inches or two and a half as in Samuda's. M. Hallette proposes to keep the longitudinal valve always closed, except where the thin piston plate is passing through at the time. He therefore does not admit the air immediately behind the piston from the top, as Samuda does, by raising the valve, but the end of the pipe is left open for the air to rush through after the piston and push it along. He intends the pipe to be continuous from one end of the railway to the other, but at intervals of 1,000 yards he proposes to have valves and side openings in the tube, to let in the air immediately after the piston has passed, and then, in the course of a short time, closing of themselves, and so be ready for the next exhausting process. He calculates that his system will require much less power than Samuda's, and work more economically, with less waste and leakage.

### Principles of Railway Management.

Continued from page 439.

#### Passenger Traffic.

Before concluding these observations, it will be useful to extend the same reasoning to the consideration of the passenger traffic. I believe, especially in regard to the conveyance of goods, that it important to direct attention to the encouragement that may be given to its increase by a lowering of fares. With respect to passenger traffic much has already been accomplished to reduce the tolls to a low



charge; but it is believed that companies destined to accommodate populous neighborhoods may, with benefit, carry their system of reduction still further.

The gauge commissioners report gives at 46½ tons, exclusive of engine and tender, the total weight of a train capable of containing 120 first class passengers, being thus composed, viz:

7 carriages weighing about.....34 tons.  
126 first class passengers with their baggage.12½ "

Total load.....46½ "  
or in round numbers, three first class passengers to a ton gross weight; taking however, the mean for all passengers, the number per gross ton will of course be more; I assume it at six passengers per ton gross.

Now in the preceding tables, the charge per ton per mile is the return per ton net, made up first of a fixed charge for interest, etc., 45% per ton per mile deducted from the experience of the Belgian railways. The working expenses of a passenger train per ton per mile are considerably greater than those for the conveyance of goods, owing to the greater speed, expense of plant, class of officers, etc.

The average working of nine years on the Belgian railways gives the cost per ton per mile for passenger trains at 1½d.; and although the difference of speed might lead to the supposition, that the cost would be less on the Belgian than on the English railways, the greater skill of the English engineers and managers, and the greater cheapness of coke must, I have no doubt, enable them to work at their higher speed with an economy equal to that of the Belgian railways, even including the passenger tax; I assume therefore, in the following tables 1½d. as the cost per ton per mile of passenger trains.

An inspection of the following tables shows of how great importance it is to the public, that the traffic per line should be great.

Taking the cost at £31,000 per mile, and allowing 10 per cent. interest on the capital, we find that a line with an average number of passengers of 120,000 per mile per annum should charge per mile per passenger, on the average.....3.86

While a line with the traffic of the Manchester and Leeds (about 650,000 passengers per mile per annum) may charge.....0.9

A line with the traffic of the London and Birmingham, (viz: about 700,000 per mile per annum).....0.85

With a traffic of 1½ million (Paris and Orleans) 0.52

Do. 1½ (London and Greenwich) 0.50

Do. 3 (Lond. & Blackwall & Qy?) 0.33

The actual charges on the London and Birmingham were, in 1840, per mile per passenger.....2.600

In 1845 they were reduced to.....1.818

By this important reduction, the public benefited to the amount of many thousands, increase in the number of passengers having been in 1845 fifty-seven per cent., (or for the half year as 222,000 is to 346,000.)\*

\* In the report of the parliamentary proceedings of the 19th March, 1846, it is stated that the London and Birmingham, Grand Junction, and other amalgamated companies propose to reduce their charges still more, that is to say, to 2d. per mile per 1st class, 1½d. per mile per 2d class, and 1d. per mile per 3d class passenger.

Table showing the diminution in the cost of carriage per passenger, dependent on the increase in the traffic.

Original cost of construction, £18,000 per mile.  
Allowing interest at the rate of 5 per cent. per annum on the capital.

Average passenger traffic per mile per annum, tons gross.	Average No. of passengers corresponding to gross tonnage, 6 to 1 ton gross.	Per ton gross per mile.	Fixed charge for interest, etc.	Actual working expenses.	Total charge.	Charge per passenger per mile.
		d.	d.	d.	d.	d.
20,000	120,000	6.18	.....	7.38	1.23	
30,000	180,000	4.12	.....	5.32	.89	
40,000	240,000	3.09	.....	4.29	.71	
50,000	300,000	2.47	.....	3.67	.61	
60,000	360,000	2.06	.....	3.26	.54	
70,000	420,000	1.76	.....	2.96	.49	
80,000	480,000	1.54	.....	2.74	.46	
90,000	540,000	1.37	1.20	2.57	.43	
100,000	600,000	1.24	.....	2.44	.41	
150,000	900,000	.82	.....	2.03	.34	
200,000	1,200,000	.62	.....	1.82	.30	
300,000	1,800,000	.41	.....	1.61	.27	
400,000	2,400,000	.31	.....	1.51	.25	
500,000	3,000,000	.25	.....	1.45	.24	
1,000,000	6,000,000	.12	.....	1.32	.22	

Allowing interest at the rate of 10 per cent. per annum on the capital.

20,000	120,000	11.58	.....	12.78	2.13	
30,000	180,000	7.27	.....	8.92	1.49	
40,000	240,000	5.79	.....	6.99	1.16	
50,000	300,000	4.63	.....	5.83	.97	
60,000	360,000	3.86	.....	5.06	.84	
70,000	420,000	3.31	.....	4.51	.75	
80,000	480,000	2.89	.....	4.09	.68	
90,000	540,000	2.56	1.20	3.76	.62	
100,000	600,000	2.32	.....	3.52	.58	
150,000	900,000	1.54	.....	2.74	.46	
200,000	1,200,000	1.16	.....	2.36	.39	
300,000	1,800,000	.77	.....	1.97	.33	
400,000	2,400,000	.58	.....	1.78	.29	
500,000	3,000,000	.46	.....	1.66	.28	
1,000,000	6,000,000	.23	.....	1.43	.24	

Original cost of construction, £31,000 per mile.

Allowing interest at the rate of 5 per cent. per annum on the capital.

20,000	120,000	10.08	.....	11.28	1.88	
30,000	180,000	6.72	.....	7.92	1.32	
40,000	240,000	5.04	.....	6.24	1.04	
50,000	300,000	4.03	.....	5.23	.87	
60,000	360,000	3.36	.....	4.56	.76	
70,000	420,000	2.88	.....	3.98	.66	
80,000	480,000	2.52	.....	3.62	.60	
90,000	540,000	2.24	1.20	3.34	.56	
100,000	600,000	2.02	.....	3.22	.54	
150,000	900,000	1.34	.....	2.54	.42	
200,000	1,200,000	1.01	.....	2.21	.35	
300,000	1,800,000	.67	.....	2.87	.31	
400,000	2,400,000	.50	.....	1.70	.28	
500,000	3,000,000	.40	.....	1.60	.27	
1,000,000	6,000,000	.20	.....	1.40	.23	

Allowing interest at the rate of 10 per cent. per annum on the capital.

20,000	120,000	19.38	.....	20.58	3.86	
30,000	180,000	12.92	.....	14.12	2.35	
40,000	240,000	9.69	.....	10.89	1.81	
50,000	300,000	7.75	.....	8.95	1.49	
60,000	360,000	6.46	.....	7.66	1.28	
70,000	420,000	5.53	.....	6.73	1.12	
80,000	480,000	4.84	.....	6.04	1.00	
90,000	540,000	4.31	1.20	5.51	.92	
100,000	600,000	3.87	.....	5.07	.84	
150,000	900,000	2.55	.....	3.75	.63	
200,000	1,200,000	1.93	.....	3.13	.52	
300,000	1,800,000	1.28	.....	2.49	.41	
400,000	2,400,000	.96	.....	2.16	.36	
500,000	3,000,000	.77	.....	1.97	.33	
1,000,000	6,000,000	.38	.....	1.58	.26	

Without pursuing these illustrations into further detail, I conclude from them that the public and the companies are both highly benefited by a large concourse of goods or passenger traffic on any one line, provided that the managers of such line are alive to

the advantages to themselves of encouraging the influx of traffic, by extraordinary reductions on tolls and fares. Referring to actual results, such of the great companies as have tried the experiment of low fares, have found their receipts increased. The London and Birmingham and Grand Junction, the Great Western, the South Eastern, the Brighton, and others have reduced their fares for passengers, and by return tickets, season tickets and other means, rendered the travelling much less expensive. They have likewise made great reductions in their charges for goods, and the result has been a profit by the change. The reductions, however, have as yet only been applied timidly, and not to the extent required to give fair play to the principle.—Hence we still see, on the majority of the lines, and we indeed see it officially reported, that their trains do not travel half or a quarter full. There is, of course, a limit to this profitable reduction, but I believe it has not yet been attained on the great lines. On short lines the working expenses are proportionally so much greater, that the limit with them will generally be (*ceteris paribus*) at a higher standard.

I have shown, with regard to goods, that in Belgium, while the canals carried on the average 400,000 tons of goods per mile per annum, the railways, owing to their high charges and want of proper accommodation for the goods traffic, carried only 40,000 tons.

Now there is no doubt that the railways can carry at as cheap a rate as the canals, and that they offer superior advantages, which ought to give them the preference without any chance of competition from canals. I attribute this inconsistency between actual results, and results that ought to be, to the neglect of an important branch of railway accommodation.

As regards the passenger traffic, I conceive that on those lines where we now see a return of the conveyance of 1,000,000 passengers per mile per annum, we shall soon see returns of double or treble that amount.—There are railways now considering the propriety of contracting for the daily conveyance of artisans to and from their abodes near the metropolis to their places of work, at rates so low, that the rent of their houses in the country, supplied with every requisite, added to the cost of their conveyance by railway morning and evening, will be less than the rents which they pay for the miserable hovels in which they now reside.

I introduce this topic for the purpose of calling attention to an important principle enunciated in some observations which I shall quote, viz: that the conveyance of the masses, i. e., of third class passengers, should have a close relation to the cost of conveyance of goods, weight for weight. More room and better accommodations must be afforded them—but as a set-off to the additional expense incurred on that score, there is a great saving in the time and cost of loading and unloading. In order to adhere throughout this essay to a

\* 47,778 passengers are stated to have been conveyed in a single day from the London bridge station of the Southeastern railway.



purely statistical character, I designedly avoid entering into the general question which is here incidentally referred to.

I quote the following passage from the report of the speech of the chairman of the London and Croydon railway company, at a general meeting of the shareholders held on the 10th of this month. The chairman stated that "an association had been recently established in London for improving the dwellings of the working classes. A very intelligent member of that association considered that it would be an error of judgment to improve the habitations in London, and had repeatedly urged the erection of suitable tenements within five or six miles of London, in order that they and their families might enjoy the pure air of the country. He considered further that this plan might be effectually carried out by the means of railways, and a proposal had been made to the board by an eminent architect, who, in his zeal for the industrious classes, proposed to construct a railway for the purpose of carrying out his plan with greater effect. But, in the first instance, he came to the directors to ascertain if they would take these people home and back again at a cheap rate. And he considered that they might effect the desired object if they would carry these people as if they were goods, and at as cheap a rate as goods were conveyed. He saw no reason why they should not accept the proposition, and bring an additional amount of traffic on their line, thus increasing their profits, and conferring great advantages on the industrious class of the community, by removing them from the moral and physical effluvia generated in all large and densely-populated cities, afford them better houses, better water, better lighting, and, in short, almost a change of existence."

Now, if such an arrangement as this were carried out, and believing that in a commercial or a financial point of view, it will be to the interest of metropolitan railways, and all railways generally terminating in very populous towns, to facilitate the carrying out of any arrangements which will have the effect of making their railway accessible to the great masses—infinitely small profits multiplied by millions will, in a public and private point of view, be better than large profits multiplied by thousands, or perhaps only hundreds. To carry out any such arrangement as is here contemplated, of course the utmost economy consistent with safety and protection from the weather would be studied. The first item of saving would be by a diminution in the speed (perhaps not exceeding 20 miles an hour) whereby considerable reduction would be made in the working charges—also the number of passengers per ton would be more than the previous average taken, which comprised in the data the weight for the accommodation of first class passengers.

In the annexed tables I have illustrated this subject of an economical and profitable conveyance of numbers brought to the utmost limit. In goods trains properly loaded, the average net weight to the gross weight is about  $\frac{1}{2}$ , or as one ton net to two tons gross.

The same proportion of net to gross weight would hold for the conveyance of passengers or the purposes just explained, and we should thus have to every two tons gross weight fifteen passengers conveyed.

Table showing the diminution in the cost of carriage per passenger dependent on the increase in the traffic. (Special illustration adapted to the conveyance of great numbers as explained in preceding text.)

Original cost of construction, £18,000 per mile. Allowing interest at the rate of 5 per cent. per annum on the capital expended.

Average passenger traffic per mile per annum, tons gross.	Average No. of passengers corresponding to gross tonnage, 7 1-2 to 1 ton gross.	Per ton gross per mile.	Fixed charge for interest, etc.	Actual working expenses.	Total charge.	Charge per passenger per mile.
		d.	d.	d.	d.	d.
20,000	150,000	6.18	.....	6.41	86	
30,000	215,000	4.12	.....	4.35	58	
40,000	300,000	3.09	.....	3.32	45	
50,000	375,000	2.47	.....	2.70	36	
60,000	450,000	2.06	.....	2.29	31	
70,000	525,000	1.76	.....	1.99	27	
80,000	600,000	1.54	.....	1.77	24	
90,000	675,000	1.37	.....	1.60	21	
100,000	750,000	1.24	.....	1.47	19	
150,000	1,125,000	.82	.....	1.05	16	
200,000	1,500,000	.63	.....	.85	11	
300,000	2,250,000	.41	.....	.65	.09	
400,000	3,000,000	.31	.....	.54	.07	
500,000	3,750,000	.25	.....	.48	.06	

Allowing interest at the rate of 10 per cent. per annum, on the capital expended.

		d.	d.	d.	d.
20,000	150,000	11.58	.....	11.81	1.57
30,000	215,000	7.72	.....	7.95	1.04
40,000	300,000	5.79	.....	6.02	.80
50,000	375,000	4.63	.....	4.86	.65
60,000	450,000	4.86	.....	4.09	.55
70,000	525,000	3.31	.....	3.54	.47
80,000	600,000	3.89	.....	3.12	.42
90,000	675,000	2.56	.....	2.79	.37
100,000	750,000	2.32	.....	2.55	.34
150,000	1,125,000	2.54	.....	1.77	.24
200,000	1,500,000	1.16	.....	1.39	.19
300,000	2,250,000	1.77	.....	1.00	.13
400,000	3,000,000	.58	.....	.81	.11
500,000	3,750,000	.46	.....	.69	.09

Original cost of construction, £31,000 per mile. Allowing interest at the rate of 5 per cent. per annum.

		d.	d.	d.	d.
20,000	150,000	10.08	.....	10.31	1.37
30,000	215,000	6.72	.....	6.95	.93
40,000	300,000	5.04	.....	5.27	.70
50,000	375,000	4.03	.....	4.26	.57
60,000	450,000	3.36	.....	3.59	.48
70,000	525,000	2.88	.....	3.11	.42
80,000	600,000	2.52	.....	2.75	.37
90,000	675,000	2.24	.....	2.47	.33
100,000	750,000	2.02	.....	2.25	.30
150,000	1,125,000	1.34	.....	1.57	.21
200,000	1,500,000	1.01	.....	1.24	.17
300,000	2,250,000	.67	.....	.90	.12
400,000	3,000,000	.50	.....	.73	.10
500,000	3,750,000	.40	.....	.63	.08

Allowing interest at the rate of 10 per cent. per annum.

		d.	d.	d.	d.
20,000	150,000	19.38	.....	19.61	2.61
30,000	215,000	12.92	.....	13.15	1.75
40,000	300,000	9.69	.....	9.92	1.32
50,000	375,000	7.75	.....	7.98	1.06
60,000	450,000	6.46	.....	6.69	.89
70,000	525,000	5.53	.....	5.76	.77
80,000	600,000	4.84	.....	5.07	.67
90,000	675,000	4.31	.....	4.54	.61
100,000	750,000	3.87	.....	4.10	.55
150,000	1,125,000	2.55	.....	2.78	.37
200,000	1,500,000	1.93	.....	2.16	.29
300,000	2,250,000	1.29	.....	1.52	.20
400,000	3,000,000	.96	.....	1.19	.16
500,000	3,750,000	.77	.....	1.00	.13

The average charge for working expenses

was stated to be 1.2d. per mile per ton net on passenger trains generally. The lower speed for the accommodation of the passengers now considered, would reduce this charge considerably, in fact bring it to the .45d. per ton net per mile, found to be the working cost of goods trains on the Belgian railways. Taking therefore .23d. as the cost per ton gross, and applying the proportion above deduced of 15 passengers to two tons gross weight, I have constructed the annexed tables again as before divided into four classes, viz:

1st. Two in relation to the costs of construction of £18,000 per mile, and £31,000 per mile.

2ndly. Two in relation to the interest on the capital of 5 per cent. per annum, also to the interest of 10 per cent. per annum.

Conclusions from Preceding Analyses and Tabular Deductions.

Assuming that which from the past management of many of the English railways, I am warranted in assuming, viz: that an enlightened desire to meet the wants of the public as to economy, speed and safety, will continue to be the ruling motive of the managers; it is clearly to the interest of the public that where hitherto 500,000 passengers have travelled 1,000,000 should by reduced fares and increased accommodation, be induced to travel in future; and that where hitherto 500,000 tons of goods have been conveyed, a demand should be created by reducing the charges, for the conveyance of 1,000,000 tons.

But this important benefit cannot be obtained by the formation of directly competing lines, which must divide the traffic between them, and thus of necessity prevent that great reduction of tolls and fares which the tables show to be consistent only with increase of traffic.

By the same tables it appears that where the traffic is very large the original cost of the railway has an influence on the amount which it is necessary to charge by no means proportionate to the relative costs. For example, with an amount of passenger traffic corresponding to 500,000 tons per mile per annum, the expense of conveying a passenger is, with an original cost of £31,000, and an allowance of 10 per cent. interest thereon, .13d. or  $\frac{1}{8}$ d.; whereas, with the original cost of £18,000, and a similar allowance of 10 per cent. interest, the cost of conveying a passenger is .09d., or  $\frac{2}{11}$ d.

The same tables show that with an average passenger traffic, corresponding to 40,000 tons per mile per annum, the remunerating charge at 10 per cent. interest, and £31,000 original cost per mile, is 1.4d. on the average.

And that with a passenger traffic corresponding to 500,000 tons per mile per annum, a charge of .13d. would produce the same remuneration of 10 per cent. on the same original cost of £31,000 per mile.

But if railways are thus, for the advantage of the public, to convey great numbers of passengers and great quantities of merchandise, it is most important that no system be peremptorily and finally adopted which shall limit the powers of railways to give accom-



moderation to that prospective increase of traffic. All railway systems ought to be eminently expansive; and to take what has been accomplished in the past as a criterion of what is to be accomplished in the future, nay, of that which the public will shortly demand, and to found any conclusion on such a narrow basis, would be most detrimental to the public interests. These demand from our engineers (and they will I doubt not satisfy the demand) increased power, increased speed, and increased economy.

Let us bear in mind that the railway system is but commenced; and looking at the great improvements, which have been made in locomotives, enabling them to accomplish the conveyance of loads double those they could draw some years ago, let us be careful in adopting the present average speed and loads of passenger and other trains as the speed and loads that will be required some years hence by the public. Let us not devise our future works and arrangements with the idea of "finality" to cramp our exertions.

The traffic is not simply to be diverted from existing channels—it is to be created by every encouragement of cheapness of transit, regularity, safety, adaptation to the wants of the public, and enlightened economy in the management and working.

The objects can only be fully attained by the cordial co-operation of all officers employed on railways; and all must be so remunerated as to be encouraged in making the strenuous efforts which are essential to introduce the improvements thus indicated.

Companies should themselves undertake (without mediators) the conveyance of goods. The communication ought to be direct between the great commercial and manufacturing public and the railway managers. Otherwise the bold deductions recommended in the carriage of goods would probably be attended by a loss, for they would not in all likelihood be met by corresponding reductions by carriers, and the public would not have the attraction of the very low fares so essential to secure great quantities. There are defects inherent in the practice of conveyance of goods by intermediate carriers which must of necessity act as a discouragement to the increase of traffic. For example, by the present system of sending merchandise through the instrumentality of carriers, intermediate stations in relation with the smaller towns do not afford them daily communication, because the carriers have not a sufficient amount of goods to load a truck for each day. If, on the contrary, the carriage of the goods were in the hands of the company, inasmuch as the goods for each town would not be divided into as many loads as there may be carriers to that station, the delivery could be a daily one. Hence the public would have the advantage of a more exact surface, and of greater dispatch, the effect of which would be an increase in the amount.

The payment of two managements, double profits, etc., must of course enhance the charges. The public interest, moreover, is not so quickly identified with that of private carriers as with that of great companies,

and does not act so quickly upon the former as upon the latter.

Considering the item of economy in the working expenses, chiefly in that part embraced under the head of locomotive expenses, viz: coke, oil, etc., the tables show that when the traffic is so great as to make the fixed charge for interest per ton very small, this item of working cost is most important. Now various means have been adopted to reduce this cost, which I shall simply report upon without recommending any in particular.

One of these methods has been, and continues to be adopted by the superintendent of the Manchester and Leeds railway, who, after having had considerable experience of the effect of working the locomotives in the usual way at the direct cost of the company, let the work by contract to the engine drivers and others, including supply of coke, oil, etc., and repair of engines; the result was astonishing, the saving being found to be as 17 to 30, or more than one-half.

I am informed that it was curious to see the effect of this plan in keeping regularity on the line. On arriving at a station, if there were any unusual delay, immediately the engine driver, whose steam was being thereby wasted, and whose profits were proportionately diminished, roused the guards and superintendents, and thus his interest succeeded better in introducing regularity than the supervision of the police. The saving in materials, coke and oil, was quite unexpected in amount.

I learn "that on the Great Western railway the engine drivers have had for some time the benefit of an arrangement similar to that of the Manchester and Leeds. A certain fixed amount of coke per mile is allowed to them, and the quantity saved by them at the week's end is taken note of, and they receive a certain per centage of the value of the coke thus saved. The effect produced is seen in the smallness of the present fixed allowance per mile as compared with the quantity allowed at first." My informant, who has tested the efficacy of the principle, adds, "I think there can only be one opinion as to the policy of giving the mechanic a direct interest in his work."

On the Paris and Orleans line a bonus is held out for a similar object to the engine drivers, and locomotive department generally, by giving them a share in the profits arising from the saving they effect in the consumption of coke. The expenses by that plan diminished upwards of 7 per cent. in 1844, as compared with 1843, the difference in the cost of coke being only 2 per cent. in the corresponding years.

The same company carry still further the principle of allowing their employees to participate in the surplus profits where these have reached above a certain per centage, and the following details explain the general plan hitherto followed in the distribution of such profits.

The Paris and Orleans railway company conceive that they have obtained, from this regulation, results highly satisfactory. The arrangement consists in holding out encour-

agements for efficient services performed with due attention to economy, by giving a right to the persons employed in the service of the company to a participation in the profits above 8 per cent., according to a scale dependent upon the relative station and usefulness of each.

For the year 1844 the division of profits was made according to the following statement:

(The exchange is taken at £1 = 25 francs.)			
The total receipts for the	Fs.	£	£
year were.....	6,901,786	=	276,071
Expenses.....	2,286,662	=	131,466
Net receipts.....	3,615,124	=	144,605
			144,605

The statutes regulate the application of this surplus as follows:			
1 per cent. sinking fund on the capital stock of the company.....	400,000	=	16,000
4 per cent. interest on redeemed and redeemable shares.....	1,200,000	=	48,000
Annuity to Mr. Leconte, the grantee.....	12,000	=	480
Dividend to the shareholders, equal to 8 per ct. per annum, including on the redeemed and redeemable shares, and the sinking fund.....	1,600,000	=	64,000
			128,480

Total payments as fixed by the statutes.....			
	3,312,000	=	128,480
Excess to be accounted for as follows.....			
15 per cent. on this surplus to be divided among the officers and men of the company.....	60,468	=	2,418 14 4
Remains for additional distribution among shareholders.....	342,655	=	13,706 0 0
Which added to the.....	1,200,000		
and.....	1,600,000		

previously set aside, gives 3,142,655 = 125,706 0 0 Or at the rate of 9 per cent. on the capital stock of the company.

#### Mode of Distribution.

The distribution of the 15 per cent. above mentioned was regulated as follows:

The officers and men employed by the company are divided into three classes, viz:

In the first—engineers and superintendents; the managers of departments and such others among the responsible officers as may be deemed entitled to be ranked in this category by the directors.

In the second—all responsible officers not included in the first, and such others as may be deemed entitled by the directors.

In the third are comprised all others engaged by the year in the service of the company, i. e., receiving an annual salary.

For the first class, each one will be entitled to  $\frac{1}{100}$  of the 15 per cent. for every 1000 francs (£40) of his annual salary.

For the second class the participation will be  $\frac{1}{200}$  for each 1000 francs (£40) of his annual salary; one-half the share so falling to each member of this category shall be invested either in stock or in a savings' bank, to be held in trust for the benefit of the person entitled, by the directors of the company whose sanction will be required for the withdrawal or assignment of the same; the second half will be paid in cash.



The balance will be assigned to the members of the third class as follows:

The one-half shall be assigned among all the members, in proportion to their respective annual salaries, and be similarly vested either in the savings' bank or stock, in the name of the company as trustees, for the benefit of each. The second half shall be distributed in cash, on the recommendation of the superintendents, to those members of the division who shall have distinguished themselves.

For 1844 these additions to the annual incomes were as follows:

For the 1st class, the total salaries of which amounted to 70,000 francs, [£2,828] the increase was rather more than 20 per cent on the salaries...	Fr. 14,260 =	£ 570	s. 8	d. 0
For the 2d class, the total salaries of which amounted to 103,800 francs, [£4,152] the increase was rather more than 12 per cent on the salary.	12,552 =	502	1	7
For the 3d, the total salaries of which amounted to 743,573 francs, [£29,743] the increase was rather more than 4½ per cent on the salary.....	33,665 =	1,346	12	0

Totals ..... 60,468 = 2,419 1 7

Whatever may be the means taken to hold out encouragement to the subordinate servants of railway companies, I believe that it is very important for the interest of the public, as well as those of the railway companies themselves, that some means should be devised to make the employees directly interested in the increase of profits which they may be instrumental, although it may be only to a small degree, in producing.

The superior officers of a great company will, generally, be supported in the very great mental exertion and bodily fatigue their arduous duties call upon them to undergo, by their sense of justice to their employers, and the praiseworthy desire for distinction and consequent improvement in their positions and incomes; but such motives cannot be supposed to influence equally all the subordinate servants, down to the very workmen; and there can be no doubt, that upon the willing efforts of all, without excepting those in the most subordinate grades, will the successful introduction of reforms, tending to the very economical conveyance of great numbers of passengers and great quantities of goods, in an essential degree depend.

Nothing is further from my views, than the adoption of any expression that could be construed into a belief, that the subordinate employees of railways would consciously relax in their efforts to discharge their duties efficiently; it is, on the contrary, universally acknowledged, that railway companies are exceedingly well served; still, where a man's salary constitutes the whole of the revenue he derives from his office, and with little prospect of any increase in his salary by extra exertions, it is not in human nature generally to volunteer those exertions beyond the requirements of ordinary routine business. "It is the interest of every man to live as much at his ease as he can; and if his emoluments are to be precisely the same, whether he does or does not perform some very laborious duty,

it is certainly his interest, at least as interest is vulgarly understood, either to neglect it altogether, or, if he is subject to some authority that will not suffer him to do this, to perform it in as careless and slovenly a manner as that authority will permit. If he is naturally active and a lover of labor, it is his interest to employ that activity in any way from which he can derive some advantage, rather than in the performance of his duty from which he can derive none.

The increase in goods traffic, where it is to depend either upon the diversion of existing traffic from inferior channels into which habit continues to drive it, or upon the creation of new traffic by the facilities offered, may be undoubtedly effected by the individual efforts of those officers, who, by their situations, come into frequent contact with the controllers of such traffic—the station superintendents, for example. If these knew that their emoluments would be increased in proportion to any increase in the traffic at their stations—they would, if in an agricultural district for example, avail themselves of their opportunities of contact with the farmers of their neighborhood, to point out to them the advantages offered by the railway for the conveyance of manure, or agricultural produce—if in a mineral district, or a locality possessed of any natural product imperfectly explored, they would make it their study to learn the wants of such districts as regards facility of transit, and if necessary make such wants known, or point out the required improvements. The results of such activity and exertions at one station or in one isolated case would be insignificant; but if a spirit of this kind could be by any system be infused into all the members of the general body of the assistants, the results of their united exertions would in the aggregate be most important.

If, on the other hand, the employees feel that by increase of labor they only add to their own toil without any corresponding increase in their emoluments, the majority will allow things to remain as they find them, and feel no desire beyond that of just doing their duty and no more.

When on lines of railway already commanding very great traffic, observations are made tending to show that by some light extra exertion, or by trifling alterations in arrangements to meet public demand, the conveyance of a new class of goods can be secured, or its quantity much increased—sometimes the remark is made, "that really the line is as full as it well can be, and any great addition will only tend to create confusion."

At other times, the recommendation to open out a new source of income to a railway by the carriage of some species of heavy goods hitherto conveyed by canal, is met by the observation, that "really the goods trains are already so numerous as to interfere sadly with the passenger traffic"—"that the latter is the most profitable, and therefore the most worthy of all attention"—and thus an improvement is delayed, or it may be altogether omitted.

Now it is questionable whether such observations would occur, if with every increase of traffic, and consequent increase of profit, a corresponding increase took place in the emolument of the servants of the company.

There would be no difficulty in selecting ap-

propriate illustrations of great improvements that have been brought about by the enlightened exertions of persevering managers of railway traffic, and in relation to goods as well as passengers. So little has hitherto been done, however, towards rendering railways available for the carriage of provisions, that I prefer giving one or two examples of what has been accomplished in this way—taking for instance the supply of fish, as being an article of food, the conveyance of which is by no means popular with traffic superintendents, and it may be fairly added with the public also, owing to the careless and positively offensive way in which it is thrust in sometimes in the same carriage with second and third class passengers.

Until lately, but small attention had been paid to the conveyance of fish to Manchester, and its price then ranged from 6d. to 1s. per pound. At that time the weekly supply brought chiefly from Hull was about three tons per week per railway. Through the exertions of Capt. Lawes, facilities were offered for the conveyance of fish from Hull to Manchester at rates similar to those charged for the ordinary heavy merchandize amounting from 16s. to 20s. a ton, or about one-tenth of a penny per lb. At first the great reduction in the cost of carriage had but little effect on the price, the fish vendors continuing to sell the fish at much the same rate as before, and consequently the amount brought by railway was increased but little. The principle of competition was brought to bear upon the fish sellers, and the consequence has been a reduction in the price to 1 1-2d. to 2d. per lb.

The carriage by railway has increased from three tons to eighty tons weekly—thus the railway company as carriers, the public as consumers, and the fishermen as producers, have all been gainers by this improvement, the result of the exertion of an enlightened manager.

It must not be supposed that even so trifling a change as this from the established practice can be accomplished without trouble. To prove the reverse, it is sufficient to state that the fish from Hull to Manchester has never got further, as the Liverpool and Manchester company refused to carry it on the same terms.

The Preston and Wyre company and the Manchester and Bolton company established a similar fish trade from Fleetwood to Manchester, but it was suddenly stopped by the North Union company (an intermediate link,) insisting on a charge larger than both the other companies' charges put together.

During the scarcity of hay which prevailed last season, the Manchester and Bolton railway and the Preston and Wyre railway companies carried hay from Ireland to Manchester at a charge for 50 miles of 10s. 4d., per ton, and this with the charge for the sea transit and the land transit on the Irish side, still left the hay considerably cheaper than that to be then purchased from the immediate neighborhood.

To-morrow takes place the opening of the Great Northern railway, which is the most gigantic of any in Europe, or even in the world. Its length, with embranchments, is 291 kilometres; it unites the capitals of two kingdoms—Paris and Brussels; its traffic will be enormous. Although the embranchments are not yet completed, there are already 175 locomotives and 32,500 carriages on the line. The feasting, and the pomp, and the parade of the opening of to-morrow will be gorgeously magnificent. Throughout the whole length of the line all the population will be on foot to welcome the trains; and at Lille, Amiens, and other great towns, there will be such rejoicings as were never seen before, and probably will never be seen again.—Paris, June 15,



**VALUABLE PROPERTY ON THE MILL Dam For Sale.** A lot of land on Gravelly Point, so called, on the Mill Dam, in Roxbury, fronting on and east of Parker street, containing 63,497 square feet, with the following buildings thereon standing.

Main brick building, 120 feet long, by 46 ft wide, two stories high. A machine shop, 47x43 feet, with large engine, face, screw, and other lathes, suitable to do any kind of work.

Pattern shop, 35x33 ft, with lathes, work benches, Work shop, 86x35 feet, on the same floor with the pattern shop.

Forge shop, 118 feet long by 44 feet wide on the ground floor, with two large water wheels, each 16 feet long, 9 ft diameter, with all the gearing, shafts, drums, pulleys, &c., large and small trip hammers, furnaces, forges, rolling mill, with large balance wheel and a large blowing apparatus for the foundry.

Foundry, at end of main brick building, 60x45 feet two stories high, with a shed part 45x20 feet, containing a large air furnace, cupola, crane and corn oven.

Store house—a range of buildings for storage, etc., 200 feet long by 20 wide.

Locomotive shop, adjoining main building, fronting on Parker street, 54x25 feet.

Also—A lot of land on the canal, west side of Parker st., containing 6000 feet, with the following buildings thereon standing:

Boiler house 50 feet long by 30 feet wide, two stories.

Blacksmith shop, 49 feet long by 20 feet wide.

For terms, apply to HENRY ANDREWS, 48 State st., or to CURTIS, LEAVENS & CO., 106 State st., Boston, or to A. & G. RALSTON & CO., Philadelphia. ja4

**TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.**

#### PASCAL IRON WORKS.

##### WELDED WROUGHT IRON TUBES

From 4 inches to 1 in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch; with Stop Cocks, T, L, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by MORRIS, TASKER & MORRIS. Warehouse S. E. Corner of Third & Walnut Streets, PHILADELPHIA.

**TO LOCOMOTIVE AND MARINE ENGINE BOILER BUILDERS.** Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufacture! and for sale by

MORRIS TASKER & MORRIS, Warehouse S. E. corner 3d and Walnut Sts., Philadelphia 11f

#### LAP-WELDED WROUGHT IRON TUBES

FOR TUBULAR BOILERS, FROM 1 1-2 TO 5 INCHES DIAMETER, and

ANY LENGTH, NOT EXCEEDING 17 FEET.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

23 Platt street, New York, 1y

**ENGLISH PATENT WIRE ROPES—FOR THE USE OF MINES, RAILWAYS, ETC.—** for sale or imported to order by the subscriber.

These Ropes are manufactured on an entirely different principle from any other, and are now almost exclusively used in the collieries and on the railways in Great Britain, where they are considered to be greatly superior to hempen ones, or iron chains, as regards safety, durability and economy. The plan upon which they are made effectually secures them from corrosion in the interior, as well as the exterior of the rope, and gives a greater compactness and elasticity than is found in any other manufacture.

Many of these ropes have been in constant operation in the different mines in England, and on the Blackwall and other inclined planes, for three and four years, and are still in good condition.

They have been applied to almost every purpose for which hempen ropes have been used—mines, heavy cranes, standing rigging, window cords, lightning conductors, signal halyards, tiller ropes, etc. Reference is made to the annexed statement for the relative strength and size. Testimonials from the most eminent engineers in England can be shown as to their efficiency, and any additional information required respecting the different descriptions and application will be given by

ALFRED L. KEMP, 75 Broad street, New York, sole agent in the United States.

*Statement of Trial made at the Woolwich Royal Dock Yard, of the Patent Wire Ropes, as compared with Hempen Ropes and Iron Chains of the same strength.—October, 1841.*

WIRE ROPES.			HEMPEN ROPES.			CHAINS.		STRENGTH.
Wire gauge number.	Circumference of rope.	Weight per fathom.	Circumference of rope.	Weight per fathom.	Weight per fathom.	Diameter of iron.	Tons.	
	INCH.	LEB. OZ.	INCH.	LEB. OZ.	LEB. OZ.	INCH.		
11	4 1/2	13 5	10	2 1/2	50	15-16	20	
13	3 1/2	8 3	8 1/2	16	27	11-16	13 1/2	
14	3 1/4	6 11	7 1/2	12 8	17	9-16	10 1/2	
15	2 3/4	5 2	6 1/2	9 4	13 1/2	1-2	7 1/2	
16	2 1/2	4 3	6	8 8	10 1/2	7-16	7	

N.B. The working load, with a perpendicular lift, may be taken at 6 cwt. for every lb. weight per fathom, so that a rope weighing 5 lbs. per fathom would safely lift 3360 lbs., and so on in proportion. 1y24

**RAILROAD IRON.**—The subscriber having taken contracts for all the Railroad Iron he can manufacture at his Iron Works at Trenton, until July next, will gladly receive orders for any quantity to be delivered after that time, not exceeding thirty tons per day. Also has on hand and will make to order Bar Iron, Braziers' Rods, Wire Rods and Iron Wires of all sizes, warranted of the best quality. Also manufactures and has on hand Refined American Isinglass, warranted equal in strength to the Russian. Also on hand a constant supply of Glue, Neats' Oil, &c. &c.

PETER COOPER, 17 Burling Slip. New York, January 23d, 1846. 1y 10

**RAILROAD IRON—500 TONS OF 67 LBS.** per yard—5 inches high—of the double headed pattern, which is now wholly used in England—now on the passage, and a further quantity will be contracted for. Also

500 tons T pattern, 56 lbs. per yard, for sale by BOORMAN, JOHNSTON & CO. 119 Greenwich street. 4:24

**LAWRENCE'S ROSENDALE HYDRAULIC CEMENT.** This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight paper-ea barrels, by JOHN W. LAWRENCE, 142 Front street, New York.

Orders for the above will be received and promptly attended to at this office. 32 1y

**A. & G. RALSTON & CO., NO. 4** South Front St., Philadelphia, Pa.

Have now on hand, for sale, Railroad Iron, viz: 180 tons 2 1/2 x 1/4 inch Flat Punched Rails, 20 ft. long. 25 " 2 1/2 x 1/4 " Flange Iron Rails.

75 " 1 x 1/4 " Flat Punched Bars for Drafts in Mines. A full assortment of Railroad Spikes, Boat and Ship Spikes. They are prepared to execute orders for every description of Railroad Iron and Fixtures. 11f

**SPRING STEEL FOR LOCOMOTIVES,** Tenders and Cars. The Subscriber is engaged in manufacturing Spring Steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

JOAN F. WINSLOW, Agent, Albany Iron and Nail Works, 1y

**CALIGRAPHIC BLACK LEAD PENCIL** Manufactured by E. Wolff and Son, 23 Church Street, Spitalfields, London.

The Caligraphic Pencils have been invented by E. Wolff and Son, after the expenditure of much time and labor. They are the result of many experiments; and every effort that ingenuity and experience could suggest, has been made to insure the highest degree of excellence, and the profession may rely upon their being all that can be desired.

They are perfectly free from grit; and for richness of tone, depth of color, delicacy of tint, and evenness of texture, they are not to be equalled by the best Cumberland Lead that can be obtained at the present time, and are infinitely superior to every other description of Pencil now in use.

The Caligraphic Pencils will also recommend themselves to all who use the Black Lead Pencils as an instrument of professional importance or recreation, by their being little more than half the price of other pencils.

An allowance will be made on every groce purchased by Artists or Teachers.

May be had of all Artists, Colourmen, Stationers, Booksellers, etc.

A single pencil will be forwarded as a sample, upon the receipt of postage stamps to the amount.

**Caution.**—To prevent imposition, a highly finished and embossed protection wrapper, difficult of imitation, is put around each dozen of Pencils. Each Pencil will be stamped on both sides, "Caligraphic Black Lead, E. Wolff and Son, London."

The subscriber has on hand a full supply of Wolff and Sons celebrated Creta Loevis, or Colored Drawing Chalks, also their pure Cumberland Lead and extra prepared Lead Pencils, and Mathematical Lead Pencils.

P. A. MESIER, Stationer and Sole Agent, No. 49 Wall Street.

N. B.—A complete assortment of Steven's *Gem* Inks, Fluids, Imitating Wood stains, and Graining Colours at the Manufacturers prices. 19f

**MANUFACTURE OF PATENT WIRE** Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition. 2v19 1y

**BACK VOLUMES OF THE RAILROAD JOURNAL** for sale at the office, No. 23 Chambers street



**PATENT HAMMERED RAILROAD, SHIP and Boat Spikes.** The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscriber at the works, will be promptly executed. **JOHN F. WINSLOW, Agent.**

Albany Iron and Nail Works, Troy, N. Y.  
The above spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, New York; J. H. Whitney, do.; E. J. Etting, Philadelphia; Wm. E. Coffin & Co. Boston. ja45

**PATENT RAILROAD, SHIP AND BOAT Spikes.** The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. York, will be punctually attended to.

**HENRY BURDEN, Agent.**

Spikes are kept for sale, at Factory Prices, by I. & J. Townsend, Albany, and the principal iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

•• Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand.

ja45

## FRENCH AND BAIRD'S PATENT SPARK ARRESTER.

**TO THOSE INTERESTED IN** Railroads, Railroad Directors and Managers are respectfully invited to examine an improved SPARK ARRESTER, recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger and freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits:

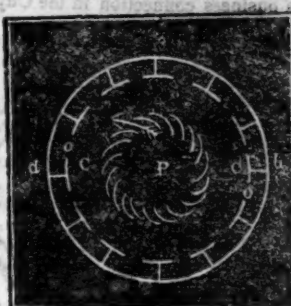
E. A. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. McKee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city or to Hinckly & Drury, Boston, will be promptly executed. **FRENCH & BAIRD.**

N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

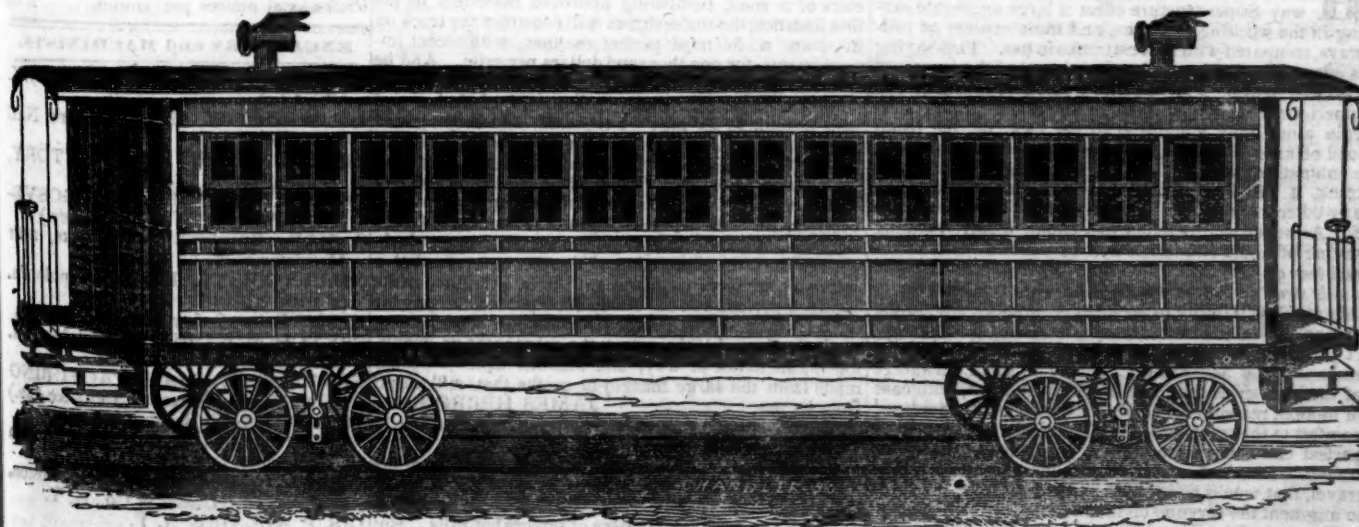
Philadelphia, Pa., April 6, 1844.

•• The letters in the figures refer to the article given in the Journal of June, 1844. ja45



**BENTLEY'S PATENT TUBULAR STEAM BOILER.** The above named Boiler is similar in principle to the Locomotive boilers in use on our Railroads. This particular method was invented by Charles W. Bentley, of Baltimore, Md., who has obtained a patent for the same from the Patent Office of the United States, under date of September 1st, 1843—and they are now already in successful operation in several of our larger Hotels and Public Institutions, Colleges, Alms Houses, Hospitals and Prisons, for cooking, washing, etc.; for Bath houses, Hatters, Silk, Cotton and Woollen Dyers, Morocco Pressers, Soap boilers, Tallow chandlers, Pork butchers, Glue makers, Sugar refiners, Farmers, Distillers, Cotton and Woollen mills, Warming Buildings, and for Propelling Power, etc., etc.; and thus far have given the most entire satisfaction, may be had of D. K. MINOR, 23 Chambers st. New York.

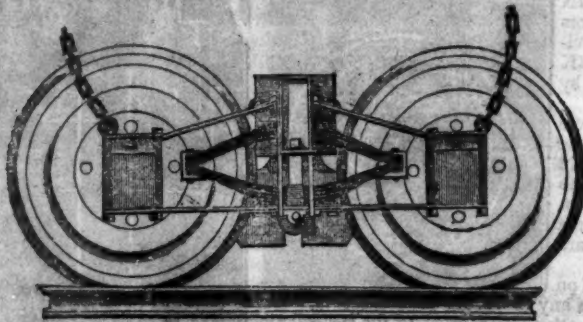
## DAVENPORT & BRIDGES' CAR WORKS.



DAVENPORT & BRIDGES CONTINUE TO MANUFACTURE TO ORDER, AT THEIR WORKS, IN CAMBRIDGEPORT, MASS. Passenger and Freight Cars of every description, and of the most improved pattern. They also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices. All orders punctually executed and forwarded to any part of the country. Our Works are within fifteen minutes ride from State street, Boston—coaches pass every fifteen minutes. 1y1



# RAY'S EQUALIZING RAILWAY TRUCK.—THE SUBSCRIBER having recently formed a business connection in the City of New



York, expressly for the manufacture of the newly patented and highly approved Railroad Truck of Mr. Fowler M. Ray, is ready to receive orders for building the same, from Railroad Companies and Car Builders in the United States, and elsewhere.

The above Truck has now been in use from one to two years on several roads a sufficient length of time to test its durability, and other good qualities, and to satisfy those who have used it, as may be seen by reference to the certificates which follow this notice.

There have been several improvements lately introduced upon the Truck, such as additional springs in the bolster of passenger cars, making them delightful riding cars—adapting it to tenders, trucks forward of the locomotive, and freight cars, which, with its original good qualities, make it in all respects the most desirable truck now offered to the public.

Orders for the above, will, for the present, be executed at the New York Screw Mill, corner 33d street and 3d avenue, (late P. Cooper's rolling mills) and at the Steam Engine Shop of T. F. Secor & Co., foot of 9th street, East

river, (of which firm the subscriber was late a partner) under the immediate supervision of Mr. Ray himself.

Several sets of trucks containing the latest improvements have recently been turned out for the New York and Erie railroad, and the New Jersey Transportation company, which may be seen upon said roads.

The patronage of Railroad Companies and Car Builders is respectfully solicited.

New York, May 4, 1846.

W. H. CALKINS, and Others.

To all whom it may concern:—This is to certify that the New Haven, Hartford and Springfield railroad co., have had in use six sets of F. M. Ray's patent trucks for the last 20 months, during which time it appears to me, they have proved to be the best and most economical truck now in use.

[Signed,] WILLIAM ROE, Sup't of Power.

I certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Philadelphia and Reading railroad for some time past, under a passenger car.

For simplicity of construction, economy in cost, lightness of material, and extreme ease of motion, I consider it the best truck we have ever used. Its peculiar make also renders it less liable to be thrown off the track, when passing over any obstruction. We intend using it extensively under the passenger and freight cars of the above road.

Reading, Pa., October 6, 1845.

[Signed,] G. A. NICOLL,

Sup't Transportation, etc., Philadelphia and Reading Railroad.

To all whom it may concern:—This is to certify that the N. Jersey Railroad and Transportation company have used Fowler M. Ray's Truck for the last seven months, during which time it has operated to our entire satisfaction. I have no hesitation in saying that it is the simplest and most economical truck now in use.

Jersey City, November 4, 1845.

[Signed,] T. L. SMITH,

N. Jersey Railroad and Transp. Co. This is to certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Long Island railroad for the last year, under a freight car. For simplicity of construction, economy in cost, lightness of material and ease of motion, I consider it equal to any truck we have in use.

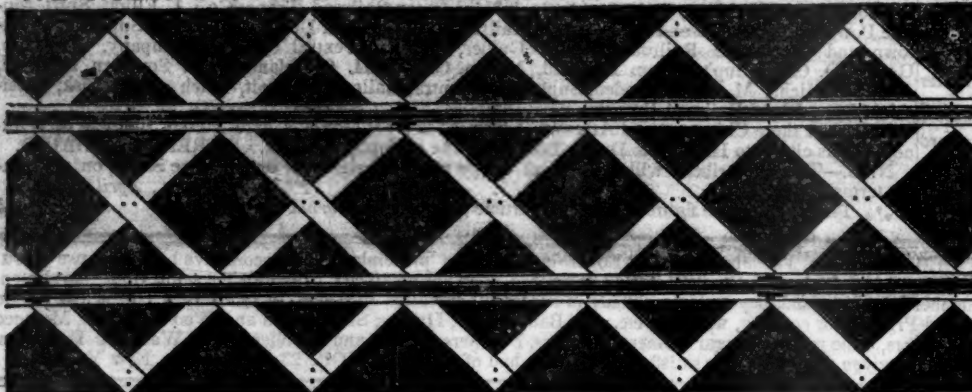
Long Island Railroad Depot,

[Signed,] JOHN LEACH,

Jamaica November 12, 1845.

1y19 Sup't Motive Power.

## HERRON'S PATENT AMERICAN RAILWAY TRACK,



As seen stripped of the top ballasting

**HERRON'S IMPROVEMENTS IN RAILWAY SUPERSTRUCTURE** effect a large aggregate saving in the working expenses, and maintenance of railways, compared with the best tracks in use. This saving is effected—1st, Directly by the amount of the increased load that will be hauled by a locomotive, owing to the superior evenness of surface, of line and of joint. This gain alone may amount to 20 per cent. on the usual load of an engine.—2d, In consequence of the thorough combination, bracing, and large bearing surface of this track, it will be maintained in a better condition than any other track in use, at about one-third the expense.—3d, As action and reaction are equal, a corresponding saving of about two-thirds will be effected in the wear and tear of the engines and cars, by the even surface and elastic structure of the track.—4th, The great security to life, and less liability to accident or damage, should the engine or cars be thrown off the rails.—5th, The absence of jar and vibration, that shake down retaining walls, embankments and bridges.—6th, The great advantage of the high speed that may be safely attained, with ease of motion, reduction of noise, and consequently increased comfort to the traveller.—7th, The really permanent and perfect character of the Way, insuring regularity of transit. To which may be added the great increase of travel, that would be induced by the foregoing qualities to augment the revenue of the railroad.

The cost of the Patent track will depend on the quantity and cost of iron and other materials; but it will not exceed, even including the preservation of the timber, the average cost of the tracks on our principal railroads. Generally, the timber structure, fastenings and workmanship, exclusive of the cost of the iron rails, will be from \$2,300 to \$4,000 per mile. On this structure, rails of from 40 to 50 lbs. per yard, will be equal in effect to

60 and 70 lbs. rails laid in the usual way. The proprietors of a road, furnishing approved materials in the first instance, the undersigned will construct the track on his plan. He most perfect manner, with recent improvements, for one thousand dollars per mile. And he will farther contract to maintain said track for the period of ten years, furnishing such preserved timber and iron fastenings as may be required, and keeping said track in perfect adjustment, under any trade not exceeding 100,000 tons per annum, or its equivalent in passenger transportation, for Two hundred dollars per mile per annum.\* To insure the faithful performance of this contract, he will pledge one-fourth of the cost of construction, with the accruing interest thereon, regularly vested, until the completion of the contract. So that a company, by securing payment to the undersigned at the specified period, will have only \$750 per mile to pay for the workmanship on the track, without any charge being made for the use of the patent, the subsequent payments, for maintenance of way, and amount withheld, being made from the large margin of profits that will result from its use.

JAMES HERRON.

Civil Engineer and Patentee.

No. 277 South Tenth St., Philadelphia.

\* A general average of the repairs done on six of the most successful railroads in this country, for a period of from six to eight years' use has been found to exceed \$625 per mile per annum, exclusive of renewal of rails. But few roads in this country carry as much as 100,000 tons per annum. When a road exceeds that quantity, the repairs due to the additional tonnage, up to 200,000 tons, will be charged at one mill per ton; over the latter, and not exceeding 300,000 tons, nine-tenths of a mill, etc. Where there are two tracks to maintain, a large reduction upon those rates will be made.

**THE AMERICAN RAILROAD JOURNAL** is the only periodical having general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

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TROY IRON AND NAIL FACTORY, H. Burden, Agent. (See Adv.)  
ROGERS, KETCHUM AND GROSVENOR, Patterson, N. J. (See Adv.)  
S. VAIL, Speedwell Iron Works, near Morristown, N. J. (See Adv.)  
NORRIS, BROTHERS, Philadelphia Pa. (See Adv.)  
KITE'S Patent Safety Beam. (See Adv.)  
FRENCH & BAIRD, Philadelphia, Pa. (See Adv.)  
NEWCASTLE MANUFACTURING COMPANY, Newcastle, Del. (See Adv.)  
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STILLMAN, ALLEN & Co., N. Y.  
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HINCKLEY & DRURY, Boston.  
C. C. ALGER, Stockbridge Iron Works, Stockbridge, Mass.

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